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OCCUPATIONAL OUTLOOK INFORMATION

LONG-RANGE EMPLOYMENT PROSPECTS

BY STATE AND REGION

PRINTING OCCUPATIONS

VETERANS ADMINISTRATION

WASHINGTON 25, D. C.

VA PAMPHLET 7—4.10

OCCUPATIONAL OUTLOOK INFORMATION
LONG-RANGE EMPLOYMENT PROSPECTS
BY STATE AND REGION

PRINTING OCCUPATIONS

THIS PAMPHLET IS ONE OF A SERIES COVERING LONG-RANGE EMPLOYMENT PROSPECTS OF A GROUP OF OCCUPATIONS BY MAJOR STATE, REGION, OR AREA (AS APPROPRIATE), FOR USE IN THE VOCATIONAL REHABILITATION AND EDUCATION ACTIVITIES OF THE VETERANS ADMINISTRATION, IN THE COUNSELING AND GUIDANCE OF VETERANS IN THE SELECTION OF EMPLOYMENT OBJECTIVES

United States Government Printing Office
Washington : 1949

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VA Pamphlet 7–4.10, "Occupational Outlook Information—Printing Occupations," is published for the information and guidance of all concerned. The material in this pamphlet has been prepared by the Bureau of Labor Statistics, United States Department of Labor, for the use of the Veterans Administration.

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The VA Pamphlet No. 7–4 has been assigned to this series of pamphlets which cover the long-range employment prospects of groups of occupations by major State, region, or area (as appropriate). Each pamphlet bears a decimal suffix in addition to the basic number: 7–4.1, 7–4.2, etc.

These pamphlets are issued to each regional and VA office, guidance center, VA and Army or Navy hospital at which personnel from the regional office are rendering advisement and guidance services, and to other personnel in the VR&E activities whose responsibilities require their use.

MAY 29 1951 BB

FOREWORD

The information contained in this series of pamphlets supplements that contained in Bureau of Labor Statistics Bulletin No. 940, "Occupational Outlook Handbook." Personnel of the vocational rehabilitation and education activities of the Veterans Administration, whose responsibilities require the use of these pamphlets, are instructed to read the introduction to the Occupational Outlook Handbook, as the statements contained therein are for application insofar as they apply to the long-range employment outlook by State and region.

This pamphlet is in two sections: The first section is a statement on employment opportunities in printing occupations in the country as a whole; the second includes separate employment outlook statements for different States and regions. Before reading the latter statements, it is important to read the first section; it contains essential background information applying to the occupations throughout the country which is not repeated in the discussions of the employment situation in the various regions.

This report was prepared by the Occupational Outlook Branch, Bureau of Labor Statistics, United States Department of Labor.

The Bureau of Labor Statistics wishes to acknowledge the generous assistance and cooperation received in connection with the study from the Printing Industry of America, Inc., the Graphic Arts Association of Washington, D. C., other trade associations, and the Joint Lithographic Advisory Council; from officials of many unions; from members of the staffs of the Government Printing Office, Bureau of Engraving and Printing, United States Employment Service, and other Government agencies.

CONTENTS

EMPLOYMENT OUTLOOK IN PRINTING OCCUPATIONS

	Page
Methods of Printing	1
Printing Occupations	1
Fields of Employment	2
Where Printing Jobs Are Found	2
Earnings and Working Conditions	4
How to Enter the Field	6
General Employment Prospects	8
Some Recent Technological Developments	8
Employment Outlook	8
Opportunities in Individual Occupations	9
Composing-Room Jobs	9
Electrotypers and Stereotypers	14
Photoengravers, Rotogravure Photoengravers, and Lithographic Occupations	15
Pressroom Occupations	18
Bindery Occupations	20

EMPLOYMENT OUTLOOK IN PRINTING OCCUPATIONS BY STATE AND REGION

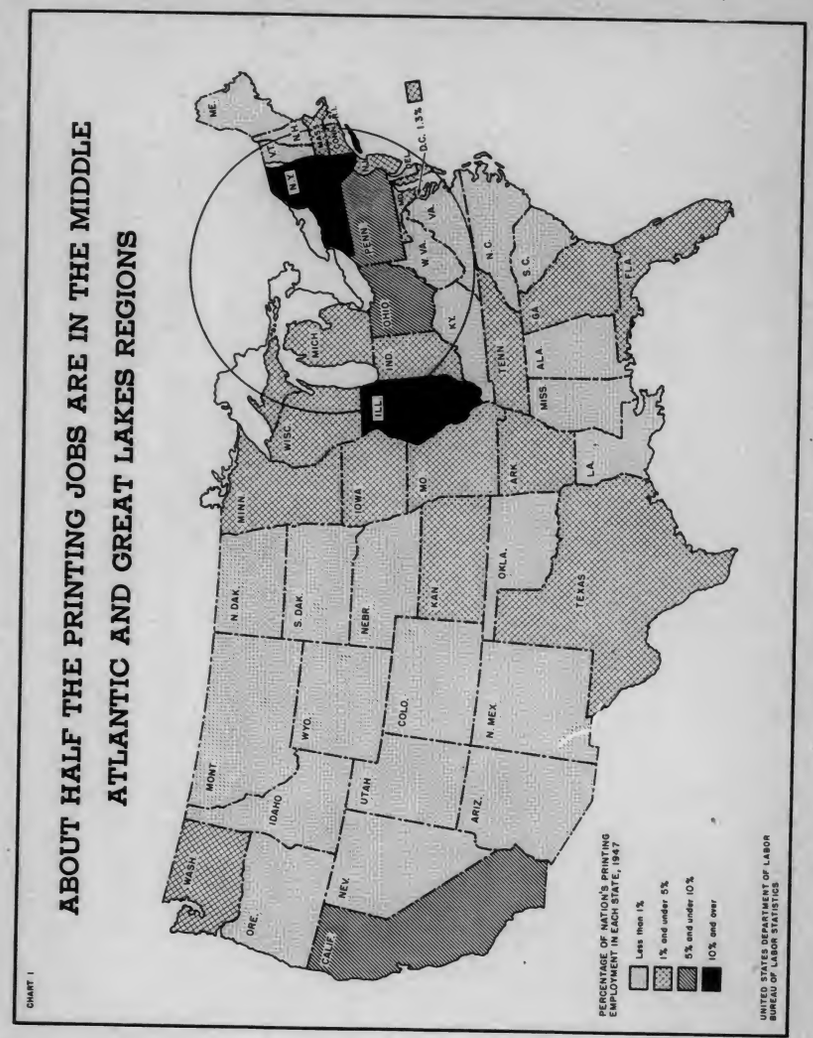
New England Region (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont)	23
Middle Atlantic Region (New Jersey, New York, Pennsylvania)	25
New York	25
New Jersey and Pennsylvania	27
South Atlantic I Region (Delaware, District of Columbia, Maryland, Virginia, West Virginia)	28
South Atlantic II Region (Florida, Georgia, North Carolina, South Carolina)	30
Great Lakes Region (Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin)	32
Illinois	34
South Central Region (Alabama, Arkansas, Kentucky, Louisiana, Mississippi, Oklahoma, Tennessee, Texas)	36
West North Central Region (Iowa, Kansas, Missouri, Nebraska, North Dakota, South Dakota)	38
Rocky Mountain Region (Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, Wyoming)	40
Pacific Coast Region (California, Oregon, Washington)	41
California	41
Oregon and Washington	42

ILLUSTRATIONS

	Page
Chart 1. (Map) About Half the Printing Jobs Are in the Middle Atlantic and Great Lakes Regions	VI
Chart 2. Hand Compositors and Linotype Operators Are Largest Skilled Trades	3
Chart 3. Newspaper and Job Shops Employ Most Printing Workers	5
Chart 4. Wage Rates in Printing Trades	7
Chart 5. A General Picture of the Flow of Work in Printing	10

APPENDIXES

I. Number of Establishments, Value of Products, and Number of Persons Employed in Printing, Publishing, and Allied Industries, 1939	44
II. Addresses of Labor Organizations and Trade Associations	45



EMPLOYMENT OUTLOOK IN PRINTING OCCUPATIONS

Printing workers make up one of the largest occupational groups in American industry. In 1948, jobs in the printing, publishing, and allied industries numbered 725,000.[1] Outside the industry as such, many thousands of printing workers were employed by governmental agencies, factories making items involving printing but which are not essentially graphic arts products, businesses doing their own commercial-type printing, libraries, and other categories of employers.

Methods of Printing

There are three methods of printing of major importance—letterpress, lithography, and gravure.

In letterpress (or relief) printing, the letters and designs to be reproduced are raised above the nonprinting areas of the type or the press plate. When the actual printing is done, ink is applied only to the letters and designs, usually by means of an inking roller.

In lithography (or offset printing), the plate is smooth or nearly so, with both the image and nonimage areas on the same level, instead of on different levels as in letterpress and gravure work. Lithography makes use of the principle that grease and water repel each other. The image areas of the plate are coated with a greasy substance to which the greasy printing ink will stick. On the press, the plate is moistened with water before each inking, with the result that only the image areas take up the greasy ink from the inking roller.

In gravure (or intaglio) work, the relation between the printing and nonprinting areas of the plate is opposite to that in letterpress. The letters and designs to be printed are cut or etched *into* the plate and are *below* the nonprinting surface. Ink has to be applied to the entire plate, but the surface is then wiped or scraped, leaving ink only in the depressions. In printing, suction is created, which lifts the ink out onto the paper.

[1] Includes employment in publishing without printing. In 1939, this was about 7 percent of the total. Publishing without printing is outside the scope of this study, and data have been employed accordingly wherever possible, as is specifically noted in the pamphlet from time to time.

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Letterpress is the oldest and by far the most common printing process. Practically all newspapers, the bulk of books and magazines, and most other printed items produced are printed by this method. Work done by photoengraving shops (principally making plates for use in relief printing of illustrations and other copy that cannot be set up in type) and by stereotyping and electrotyping shops (mainly, producing metal duplicates of type forms and photoengravings, for use in press plates) is also part of letterpress printing.

Lithography, though still much less in use than letterpress techniques, is the most rapidly growing method of reproduction. Practically all items printed by the relief process are also produced by lithography—including, for example, books, calendars, maps, posters, labels, office forms, sheet music, and even newspapers. Almost all printing on metal and much of the printing on rough paper is done by this method.

Gravure printing, the process which is least employed, is of two main types: Rotogravure (in which press plates are made from pictures by a method based on photography) and hand or machine engraving. The beautiful picture supplements of some Sunday newspapers are the best known, but are not the only rotogravure products. Rotogravure pictures appear in many magazines and are used in other forms as well. Some printing on metal and metal foil is done by this means. Hand or machine engraving is used in making engraved stationery, greeting cards, and similar products.

Printing Occupations

The all-round printer, skilled in typesetting and also in operating a press, was the typical printing worker up to the closing years of the nineteenth century. Some craftsmen who are adept in both these kinds of work are still employed in small newspaper and job shops. In the printing industry as a whole, however, they are greatly outnumbered by specialized craftsmen and semiskilled employees.

The largest group of skilled and semiskilled

workers are in the composing room, the department responsible for typesetting. Other major groups are the printing pressmen and their assistants, photoengravers and rotogravure photoengravers, electrotypers and stereotypers, lithographic workers, and bookbinders and bindery workers. Chart 2 shows the number of people employed in 1940 in each of the main occupations in these categories.

Besides the occupations shown in chart 2, there are many other small groups of skilled or semiskilled printing workers. In some plants, especially in the newspaper industry, the composing-room work force includes Ludlow operators, who run a typecasting machine known as the Ludlow Typograph. Big composing rooms nearly always employ one or more "stonemen," who place the pages of type in the large type forms in which they leave the department. Another small group of workers found in large plants are the mechanics who specialize in repairing and adjusting typesetting machines, printing presses, or bindery machines. Steel- and copper-plate engravers, on the other hand, work mainly in small engraving shops. They cut or etch lettering and designs in the plates, by hand or machine.

Most of the occupations indicated in the chart and the preceding paragraph are skilled jobs. The main exceptions are press assistants and bindery workers whose jobs are semiskilled, as are those of many monotype-caster operators and some lithographic workers. Proofreaders in nonunion shops are sometimes classed as clerical employees.

In skilled occupations practically all the workers are men. However, many of the semiskilled workers, especially in binderies, are women. Small numbers of Negroes are employed in skilled jobs; a greater number, in semiskilled occupations. In the several hundred shops which print newspapers or other items for the Negro community the great majority of workers in all types of jobs are Negro.

To complete the picture of the printing work force, the professional, administrative, clerical, and unskilled employees of printing plants should be mentioned. The chief professional workers are the reporting and editorial staffs of newspapers and other houses that do their own publishing. In addition, all sizable plants have executives, estimators, salesmen, stenographers and other clerks, and laborers of various types. The employees usually have duties much like those of comparable personnel in other industries.

Fields of Employment

The establishments engaged in newspaper printing and publishing make up by far the largest printing industry in terms of employment, even after excluding employment in newspaper houses doing publishing only (without printing). (See chart 3.) [2] More than a third of the people working in the printing industries in 1939 were in newspaper shops. Furthermore, the dollar value of items produced in newspaper plants was much greater than for that of the products of any other printing industry.

The great variety of printing items, however (during World War II, the War Production Board estimated the number to be some 300,000 different items), were produced outside the newspaper industry. General commercial or job printing (letterheads, business forms, posters, displays, calendars, folders, etc.) is the second largest printing industry in terms of employment. There are many more commercial shops than newspaper plants, but the average job shop is so small that commercial printing as a whole has both fewer employees and a smaller dollar value of output than newspaper printing. Third in line is Lithography.

Periodicals (excluding periodicals publishing without printing) is the next largest printing industry. Book printing and printing and publishing make up a somewhat smaller group. Other branches are engaged mainly in producing greeting cards or gravure items, or in doing bookbinding and other bindery work. The so-called service industries for the printing trades do primarily typesetting, engraving (including photoengraving), or electrotyping and stereotyping for printing shops. In addition, many printing and bindery workers are employed by Government agencies, libraries, and manufacturers and other firms doing some printing in connection with a business of another type, such as printing labels for canned goods. The largest printing plant in the world is the United States Government Printing Office in Washington, D. C.

Where Printing Jobs Are Found

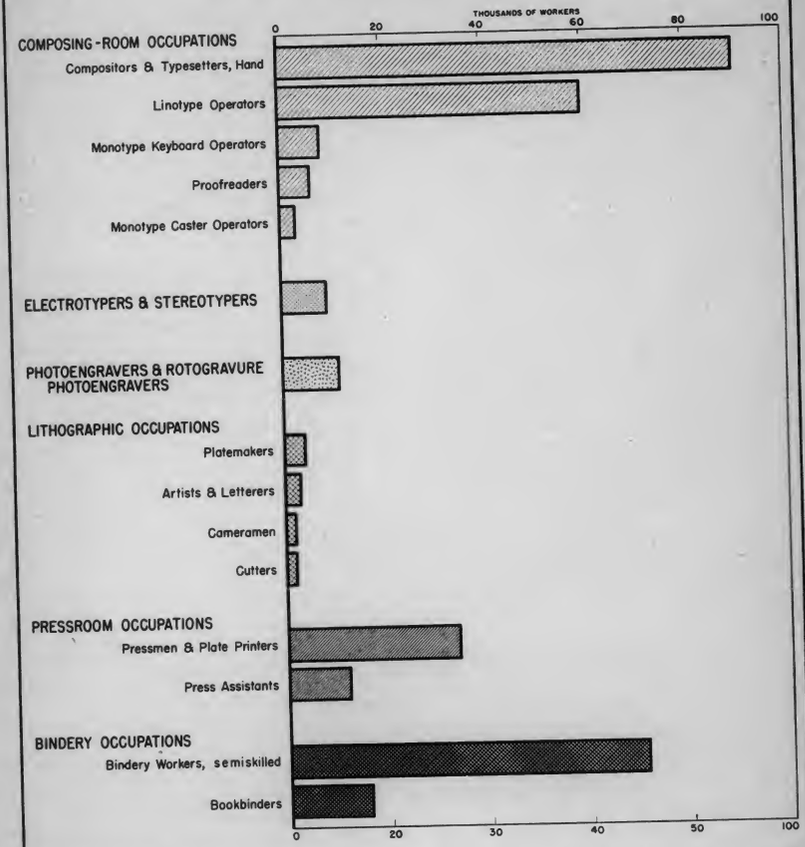
As Chart 1 shows, well over half of the printing jobs in the country are located in a few States,

[2] The classification of printing plants in this report is that used by the Census of Manufactures. Appendix I gives figures on the number of establishments, value of product, and number of properties and employees in each industry. Data throughout this report are, in general, exclusive of publishing without printing.

CHART 2

HAND COMPOSITORS AND LINOTYPE OPERATORS ARE LARGEST SKILLED TRADES

EMPLOYMENT IN THE IMPORTANT SKILLED AND SEMISKILLED PRINTING AND BINDERY OCCUPATIONS, 1940



UNITED STATES DEPARTMENT OF LABOR
BUREAU OF LABOR STATISTICS

BASED ON 1940 CENSUS OF POPULATION AND OTHER SOURCES

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mainly the Middle Atlantic and Great Lakes. The principal States and cities involved are New York (New York City), Illinois (Chicago), Pennsylvania (Philadelphia), and Ohio (Cleveland and Cincinnati). More than half of the Nation's printing is done in the first three cities alone. Other leading centers, in and outside the two principal regions indicated, are Los Angeles, San Francisco, Detroit, St. Louis, and Minneapolis-St. Paul.

However, almost every small town has a printing shop of some kind—frequently a small newspaper plant which also handles any job printing needed in the community.

Employment is concentrated in the above areas, particularly in job and periodical printing. In the newspaper industry, the number of small local newspapers scattered throughout the country, elsewhere than in these areas, is great enough to make for a much large proportion of this industry's jobs being found outside the main centers.

Earnings and Working Conditions

Young people and others seeking jobs in printing trades will find that labor organizations strongly influence conditions of employment, including wages, and even hiring policies. Often union membership is a requisite to continued employment, if not the initial hiring. Many workers in plants having no collective bargaining contracts are union men. Further details on printing unions appear in the sections on individual occupations (which follow).

Such factors as those indicated above and the large number of skilled workers employed have tended to make and keep earnings in the printing industry higher than in most others. The average hourly earnings for production workers in newspaper and periodical plants, approaching $2 at the close of 1948, are higher than in any other manufacturing industry. At the level indicated, newspaper and periodical wage earners were making fully 55 cents or better an hour more than factory workers as a whole. The corresponding average for book and job and lithography personnel was $1.60 in each case.[2]

What a printing worker can expect to make varies greatly from one occupation to another, as well as from city to city, and in other ways. The best source of information on wages in different occupations are the separate newspaper and primarily book and job union wage scales reported annually to the Bureau of Labor Statistics (Union Wage Scales Section, Wage Analysis Branch). These scales are the minimum straight-time day rates paid under collective-bargaining agreements. They are usually uniform for each occupation in a given locality and branch of the industry. In addition there are premium overtime and other special rates of pay and shift differentials. Moreover the scales, in general, represent only wage rates in skilled and semiskilled printing trades (all highly organized), such as those covered in this pamphlet. For the foregoing and other reasons they are not comparable to the average-earnings figures given in the preceding paragraph, which involve all types of wage payments (including penalty overtime, premium pay, etc.) and all types of wage earners.

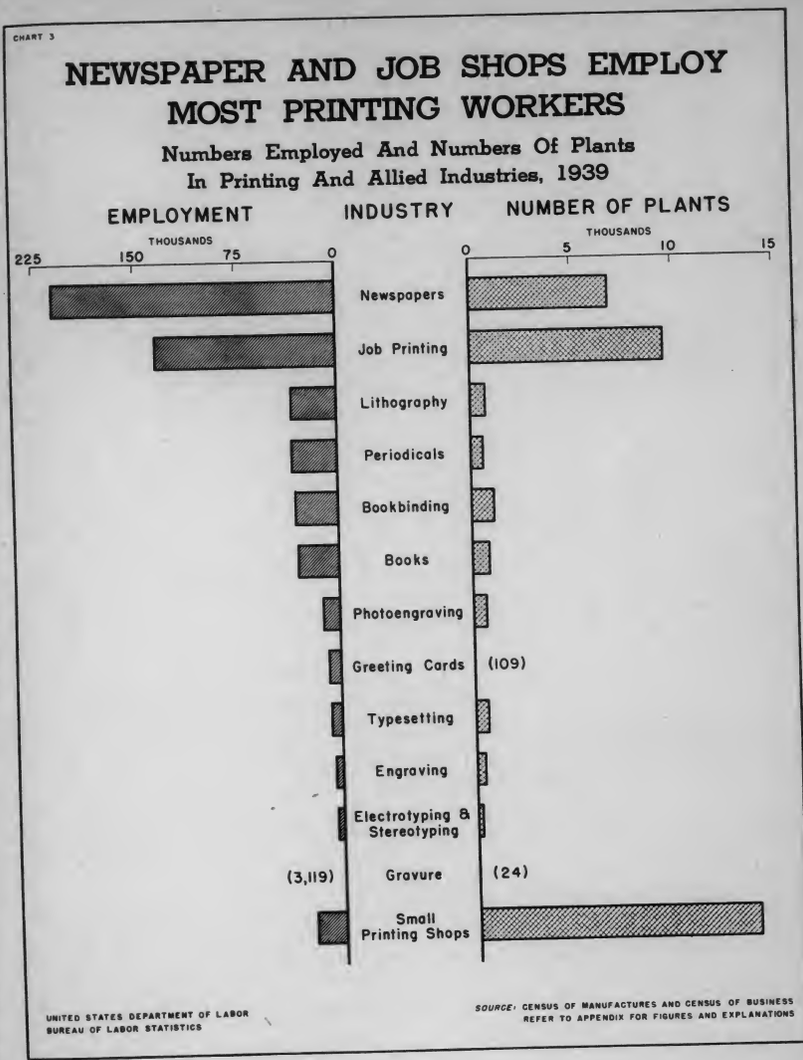
In January 1948, union wage scales in the principal printing centers averaged about $2 an hour. For skilled workers, most rates were between $1.85 and $2.30 an hour; for others, they were usually between $1 and $1.70. Since January 1948, many wage scales have increased—some substantially. Chart 4 shows the average wage rate for most of the major trades in effect in the 75 BLS reported cities on January 2, 1948; more than 100,000 workers were covered by the scales involved. Scattered data on lithographic workers from sources other than BLS suggest that for at least some occupations and areas offset scales may tend to be higher than those in letterpress and even gravure.

Later sections of this pamphlet give additional information on wages by occupations and regions.

Conclusions drawn do not necessarily apply outside the cities covered, nor to every instance to which they appear to refer. But the exceptions are not within the area of interest of the bulk of job candidates. Where more than one scale is shown for a given occupation in a given city, this may represent two or more effective rates based on variations in jobs requirements, e. g., standard photoengraver rate may be $2.58 an hour, tint layers in the occupation may earn $2.84 (Boston newspapers), there may be a rate of $1.50 an hour for one-color pressmen in a given city, $1.75 for two-color men. There are frequently differences in scale between English and foreign-language operations.

[2] Employment Statistics Branch, Bureau of Labor Statistics.

CHART 3



In most printing plants, as in many other manufacturing establishments, workers are paid time and a half for overtime work not only above a standard number of hours a week but also above 8 hours a day. The standard workweek is usually 37½ hours in newspaper plants. In other printing shops, it is usually 40 hours. Work on Sundays and holidays is customarily paid for at time-and-a-half or double-time rates in most branches of printing. In newspaper plants, the standard workweek often includes Sundays and work has to go on as usual on holidays; however, time-and-a-half or double-time is paid for these days only when they are not part of the employee's regular shift. Night-shift workers in union shops generally receive about $5 extra for a 37½- or 40-hour week. There are many other types of provisions for overtime and special rates of pay.

How much workers earn during a year depends not only on their rates of pay but also on how regularly they are employed. Printing workers are fortunate in having steadier employment and earnings than those in many other industries. Earnings tend to be especially steady in newspaper work.

Paid vacations are called for by most wage agreements. The majority of union workers receive 2 weeks' vacation with pay after 1 year of employment. In addition, the printing unions are noted for welfare provisions for their members; for example, pensions, sanitarium facilities, and educational programs.

How To Enter the Field

Apprenticeship is the accepted way of entering skilled printing occupations. With very rare exceptions, it is the only means by which one may qualify as a journeyman in a union shop, where the ratio of apprentices to journeymen is established by the agreement between the employers and the union.

Printing apprenticeships usually last from 4 to 6 years, depending on the occupation and whether the shop is union or nonunion. The training program covers all phases of the particular trade and almost always includes classes in related technical subjects as well as training on the job.

Starting pay of an apprentice is usually 30 or 40 percent of the wage rate for journeyman. This is increased once or twice a year, until, in the final year or half-year of training, he receives 80 or 90 percent of the journeyman rate. Men who have had some experience in the trade, in either civilian life or in the armed forces, can often obtain credit for this. They will then start at a wage above the beginning apprentice rate, and the length of time before they become journeymen will be reduced. Veterans who qualify under the GI bill of rights may also receive allowances from the Federal Government during part or all of the training period.

To be eligible for apprenticeship, applicants are generally required to be 18 (though sometimes only 17) years of age and not over 30. A physical examination is usually given to find out whether the applicant is free from communicable diseases, has eyesight adequate for the particular occupation, and is in good enough physical condition to do the work which will be involved in his job. Exceptional physical strength is rarely required. Moreover, printing is, on the whole, a relatively good field of employment for handicapped people. A considerable number of workers, particularly linotypists and compositors, have speech or hearing defects; some are even totally deaf. Men who have lost one or both legs or do not have the use of all 10 fingers have proved satisfactory in some composing-room occupations. In general, success in a job depends on the individual's ability to do the work and to adjust himself to specific working conditions. Therefore, handicapped people should not consider themselves automatically disqualified for employment in the industry but should seek competent professional advice.

Education is another factor which employers consider in selecting apprentices. High-school graduation is usually required and always preferred. A thorough knowledge of spelling, punctuation, and grammar is essential for most trades. Technical training in a printing trade school is desirable, as are printing courses in a regular high school where they are often a part of an industrial arts program. In addition, courses in art, such as drawing, design, color, and lettering, are helpful for many kinds of printing work.

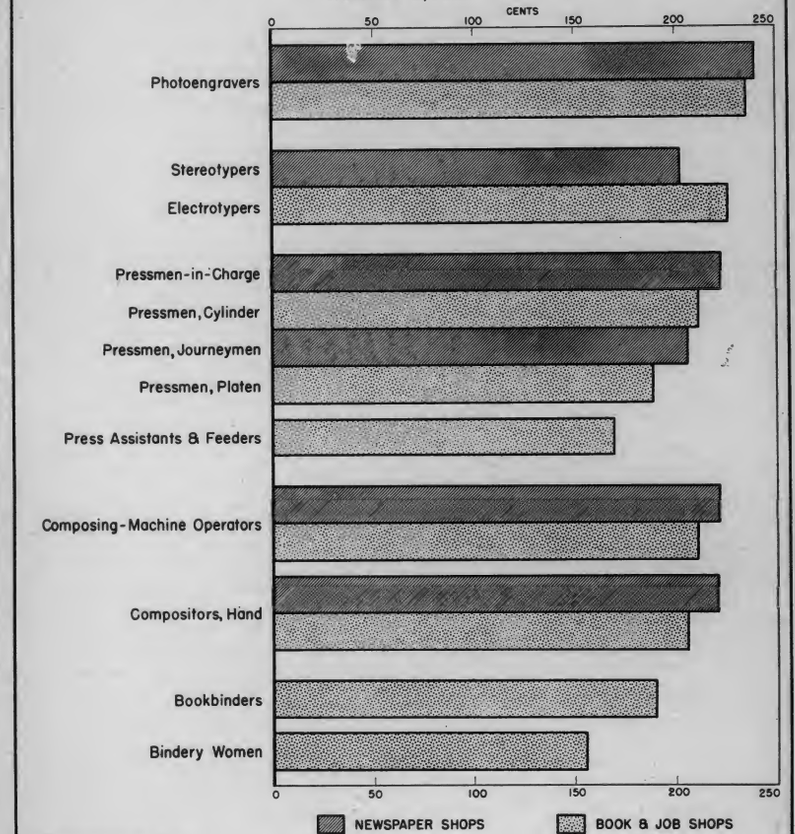
As of December 31, 1948, there were 410 registered group apprenticeship programs and many hundreds of registered individual-establishment apprenticeship programs in the country, covering one or more of the trades in the printing industry, recorded by the Bureau of Apprenticeship, United States Department of Labor. The number actually in training under such programs in early

CHART 4

WAGE RATES IN PRINTING TRADES

Average Union Rates Per Hour In Newspaper And Book And Job Shops, For Selected Occupations

JANUARY 2, 1948



UNITED STATES DEPARTMENT OF LABOR
BUREAU OF LABOR STATISTICS

1949 was approaching 15,000.[4] The likelihood is that since there are many programs not registered (and not covered by Bureau of Apprenticeship statistics), the aggregate number of young people in training status of one kind or another is greater than is indicated. A late 1948 report by the Veterans Administration showed that about 20,000 veterans were receiving some training or education in printing and publishing occupations under the GI bill of rights.

Information on opportunities for apprenticeship or other types of printing employment in a particular locality may be obtained from several different sources. Applicants may go to the nearest office of their State employment service, affiliated with the United States Employment Service, or to any printing plants in the neighborhood (the addresses can be obtained from the classified section of the local telephone directory). Local unions and local employer associations can be of great assistance. If none is listed in the telephone directory, an applicant may write to the national headquarters of these organizations (the addresses are given in appendix II) and ask them to refer the letters to their nearest branches. Editors of hometown newspapers can also give valuable information and advice.

General Employment Prospects

The long-run trend in printing employment has been upward. This has occurred despite marked gains in output per man-hour, resulting largely from technological changes, such as the introduction of the linotype machine in the 1880's and increasingly faster speeds of press operation. Rising demands for printed materials, stimulated partly by the relatively lower costs brought about by technical progress, have more than offset any tendency for the number of jobs to be reduced by developments in printing machinery.

In general, changes in printing have for the most part been evolutionary rather than revolutionary. The new machines and methods have not affected the total employment as much as they have influenced the nature and relative importance of the different graphic arts products, processes, and occupations; the geographical dispersion of the various branches of the industry; and the working conditions, in printing shops, including for example the length of the workweek.

Some Recent Technological Developments

Now in commercial use or in the laboratory stage are a wide variety of new devices and techniques, ranging from such comparatively simple items as electronic counters to highly complex systems of radio transmission of copy and proof. Some of the new methods affect primarily a single printing operation, while the influence of others may be spread across the entire printing field.

One of the developments, relating to composing-room work, involves the use of special typewriters which "justify" copy (even it up at the right-hand margin) by varying the space between words. The copy is "pasted-up," photographed, and plates made by means of photoengraving. These are then used to produce stereotypes, to serve in the usual manner (see p. 17), or offset plates are made and the copy is run off on an offset press.

Implying a still greater technical revolution is the Fotosetter, a photocomposition machine, which has been tested principally at the Government Printing Office and is not yet in commercial use. This equipment, expected to be equally practicable in a lithographic plant, a gravure establishment, or a letterpress shop, is said to be as effective in composition as is the present-day method. It is claimed also that it is easier to operate than typesetting machines now in use and that it does the job faster. Its outstanding features are a unique matrix and a special automatic camera which photographs letter characters one at a time and records them on a new type of photographic film in lines assembled in galley form.

A new type of engraving machine uses photoelectric cells to guide a heated steel stylus, instead of the conventional chemical process. Magnesium, rubber, and plastics are now being widely used in place of zinc and copper to make printing plates.

A new development that may replace some of the conventional printing presses is "electronic printing." This process utilizes an electric force to draw ink off the printing surface to the paper without actual contact occurring. It is claimed that this device can turn out printed materials at many times the speed of regular presses. Improvements are also being made on conventional printing presses that increase their speed of operation and these will have a definite effect on press-room work.

The total effects of the prospective technical change on the number of printing jobs during the next 5 or 10 years is not likely to be great. In the past, changes in printing have been gradual, and established practices will undoubtedly continue to predominate. These new developments are, however, indications that over the long run there may be substantial alterations of the conventional printing processes that will significantly affect both the kind and number of jobs.

Employment Outlook

There will be several thousand job openings in printing during the next few years, including a larger number of training opportunities than before the war.

In 1940, about 1 out of every 10 skilled and semiskilled printing workers was unemployed. This situation quickly changed after Pearl Harbor, when many workers went into the armed forces and into war industries. In addition, there were, of course, some retirements and deaths. Replacements could not be obtained in sufficient numbers, because of the Nation-wide labor shortage. As would be expected, it was particularly hard to recruit young men for training. At the end of the war, there were marked labor shortages in almost all occupations.

In the immediate postwar period following VE-day, employers began large-scale rehiring of their former workers and other returning journeymen and nonjourneymen. Many new trainees were taken on and have continued to be added. In the printing, publishing, and allied industries as a whole, including publishing without printing, employment of production workers has risen by 30 percent or more since midspring 1945; employment of nonproduction workers, by 25 percent or more. Even the newspaper industry, suffering serious newsprint supply difficulties, has experienced a substantial expansion during the period. Despite these gains in employment, there seem to be continuing manpower shortages in one or more crafts, at least in some localities. A survey made by the trade magazine *Printing* (January 1949) showed that the reporting firms as a group needed 5 percent more skilled workers than were currently on their pay rolls. The same study revealed expectations of a volume of business in 1949 only slightly below 1948.

The outlook appears to be for a continued, but much more moderate and irregular, growth in the Nation's printing staff during the next year or so and thereafter, if general economic conditions remain favorable. Contributing toward this increase over the longer run will be the persistently rising demands for printed products, such as advertising materials, textbooks, and magazines, and the increasing availability of new machinery and supplies. Unusually large numbers of job openings resulting from retirements and deaths may also be expected for awhile, because of the postponement of retirements during and since the war and the fact that the average age of workers in the skilled printing crafts is now quite high.

OPPORTUNITIES IN INDIVIDUAL OCCUPATIONS

Composing-Room Jobs

Copy to be printed by the letterpress process starts its trip through a printing plant in the composing room as shown in chart 5. There the type is set and assembled in type forms, ready for the pressroom—or for electrotyping or stereotyping, if printing is to be done from press plates instead of directly from type forms.

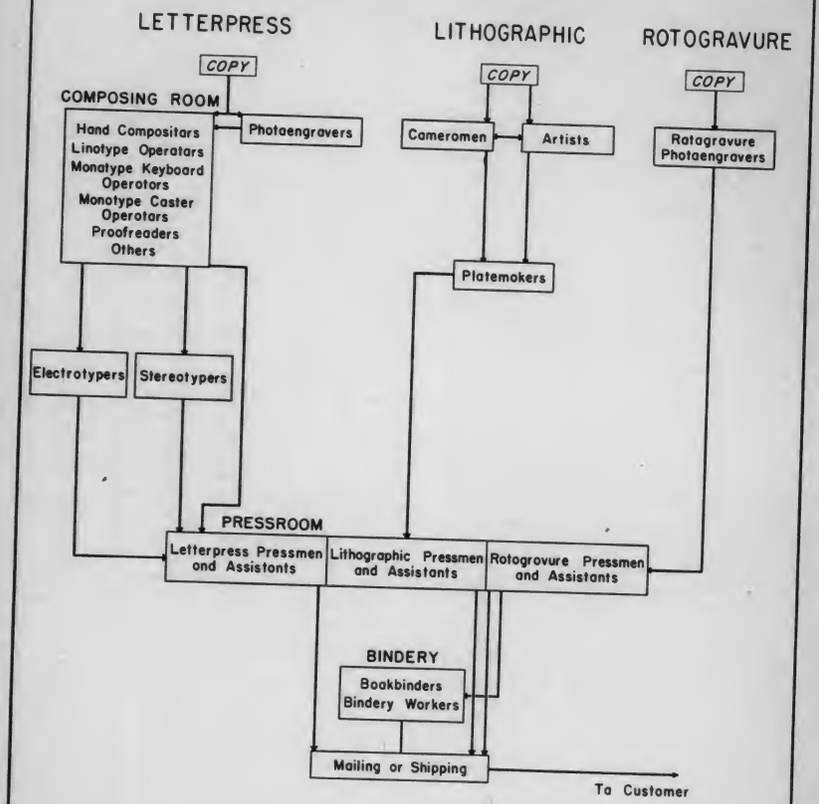
Hand Compositors and Typesetters

The oldest and largest composing-room occupation (with probably no less than 100,000 now employed) is that of hand compositor or typesetter. This job involves setting each line of type in a "composing stick"—letter by letter and line by line and, when the stick is full, sliding the completed lines onto a shallow metal tray or "galley." Even in shops where all "straight matter" (such as you are now reading) is set by machine—and there are many—hand compositors may still be needed to set some of the type required for headlines, titles, and other special work and to assemble the machine- and hand-set type. Taking proofs of type that has been set (that is, print-

[4] Unpublished data of the Bureau of Apprenticeship, United States Department of Labor. A "registered program" is a written description of the terms and conditions of employment and training of apprentices in a particular trade and/or area developed by a joint apprenticeship committee equally representative of the local union and the local employer association or participating employer or employers. Any numbers of employers in the area covered by the program may subscribe to and cooperate with the program. Almost always, cooperating establishments or a good portion of constituent association members are actually in the process of training one or more young men. "Registration" is with State Apprenticeship Councils or the Federal Commission on Apprenticeship. Bureau of Apprenticeship reports for early 1949 are representative of total registered area programs for virtually all States.

CHART 5

A GENERAL PICTURE OF THE FLOW OF WORK IN PRINTING



UNITED STATES DEPARTMENT OF LABOR
BUREAU OF LABOR STATISTICS

ing a few copies on a proof press), checking the proofs against the original copy, correcting errors in typesetting, page make-up (arranging type and any needed engravings into pages), and backing the completed pages into forms are among the other tasks sometimes performed by compositors, particularly in small shops. In large plants, however, page make-up is usually done by special "make-up" men chosen from among the compositors, and the type forms are generally locked up by "stonemen."

All the major branches of letterpress printing—newspapers, job, book, and periodicals—employ large numbers of hand compositors. Smaller numbers work in other kinds of printing shops or in service shops doing typesetting on contract for printing establishments. A good many men in the occupation have their own small job or service shop.

Qualifications for Employment. A 6-year apprenticeship is usually required for employment as a journeyman compositor or typesetter. In union shops, apprenticeship of this length is always needed, except in the case of some veterans with military experience related to printing and apprentices for whom shop foremen recommend shorter training periods in recognition of outstanding ability.

The apprenticeship commonly found in this trade includes a considerable amount of classroom and correspondence study. Printed manuals of instruction have been prepared by the International Typographical Union (A. F. of L.) and the Printing Industry of America, Inc. (employer associations), these manuals are used not only in apprenticeship programs but also in vocational schools.

Besides having the educational qualifications needed for all skilled printing occupations, a compositor should be good in arithmetic so that he can calculate spacing of type on pages. A knowledge of English is especially important in this occupation, since the worker should be able to catch errors in copy before setting type. Imagination and artistic ability in planning page lay-outs are assets which may help him to advance to lay-out work or make a success in business for himself.

It is necessary for the worker to be in good enough physical condition to be on his feet 8 hours a day and move around considerably. He should also be able to use hands, arms, and eyes constantly.

Outlook. Employment opportunities for journeymen compositors are expected to be very good in most parts of the country during the next few years. Since VJ-day there have been many more openings for inexperienced men than usual. To make up for the wartime deficit in training, employers have generally taken on as many apprentices as are permitted by the ratios of apprentices to journeymen established by union agreements or that it has been feasible to take on, and training opportunities are becoming much fewer. Apprentice members in the International Typographical Union in all composing-room trades now number several thousand more than in 1945—6,000 at the last count in 1948. Similar gains were registered in other categories of trainees.

Employment in this occupation will no doubt tend to decrease, in the long run, as it was doing before the war—owing to continued advances in machine typesetting and to other factors. The decline will be slow and will probably not involve many lay-offs. Men in the occupation should have a good chance of holding their jobs indefinitely, especially if they have machine (linotype or monotype) as well as hand skills.

For years, there have been so many small general printing shops that competition for business has been keen in most parts of the country, and earnings of shop owners have often been very inadequate. Some veterans and others wishing to go into business for themselves may find favorable opportunities during the next few years. Those with good all-round civilian experience will have the best chance of success. Men with composing-room skills plus supervisory and managerial abilities will also find some immediate openings in salaried positions with large and well-established firms and, in general, good opportunity for advancement to such positions.

Earnings and Unionization. Hand compositors are among the better-paid printing-trades workers, union wage scales in effect in a large number of cities on January 2, 1948, averaging $2.07 an hour in book and job printing and $2.21 in newspaper plants.

The low scale in the country in the cities covered was in book and job work in Portland, Maine, at $1.13 an hour. (For newspaper work in the same city, the rate was at least 50 cents higher, but also virtually the national low in this field.) At the extreme upper end of the scale was a rate of $2.55 an hour in Detroit for most newspaper craftsmen. More than half the scales were between $1.90 and $2.30 an hour; many are now considerably higher.

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A large proportion, if not the great majority, of compositors are represented by the International Typographical Union (A. F. of L.), one of the six major unions of printing workers.

Linotype Operators

In the late 1880's, a new machine, which was to revolutionize the composing room and the printing industries generally, came into use. This machine, the now famous linotype, sets type very much more rapidly than is possible by hand (as does the "intertype," a similar machine invented some years later). Reading from copy clipped to the machine's copyboard, the linotype or intertype operator selects the letters and other characters to be printed by operating a keyboard which has about 90 keys. After he completes each line, he works a lever, and the machine then casts the lines of type automatically in solid strips known as slugs. Other duties performed by the operator include removing type from the machine, putting new "pigs" (blocks) of type metal into the melting pot, and making adjustments. In shops having a considerable number of linotype machines, however, a "machinist" is usually employed who makes all but the minor adjustments directly connected with machine operation.

As linotype and intertype machines have come into wider and wider use, the number of operators needed has increased, until they are now the second largest group of composing-room workers. In 1940, about 60,000 were employed; their number is now considerably greater. The largest group of such workers are in newspaper and job shops, but some are employed in book and periodical houses and in service shops doing machine typesetting for printing firms. Some linotype operators have their own service shops.

Qualifications for Employment. Like hand compositors and typesetters, these machine operators are skilled journeymen. The apprenticeship requirements for their occupations are usually the same as for hand compositors, except that in the last 6 months of training the linotypist apprentice receives specialized training in machine work. Qualifications needed by apprentices are much the same for machine as for hand typesetting. However, there is less need for artistic ability and more for mechanical aptitude, to help the linotypist understand the mechanism of his machine and make adjustments.

Outlook. The employment outlook for skilled linotype (and intertype) operators during the next few years is good in the country as a whole. There will also be some training opportunities, though not as many as during the first year or two after the war when several thousand newcomers were taken on for training (combining hand and machine programs). Top-skilled men, with experience in hand as well as machine composition and with supervisory and managerial abilities, will find some immediate openings in salaried positions or will have a good chance for advancement to such jobs. Some ex-servicemen and others wishing to go into business for themselves may find favorable opportunities to do so; those with good all-round civilian experience will have the best chances of success.

The long-range outlook, too, is reasonably favorable—more so than for hand compositors, for example. Employment has so far tended to rise over the years and should continue to do so for some time. Eventually, however, technological and other factors may lead to a stable or even a declining trend in employment. On the other hand, printing tends to be less affected by declines in general business activity than does manufacturing as a whole.

Earnings and Unionization. Linotype operators tend to have much the same rates of pay as hand compositors, as is shown by the data on union wage scales for both trades included in the State and regional sections of this report. A large proportion, if not the great majority, of linotypists are represented by the International Typographical Union (A. F. of L.).

Monotype Keyboard Operators

Another step forward in typesetting was the invention of the monotype keyboard and monotype casting machines. With these machines it is possible to cast individual letters and other type characters automatically (instead of solid lines, as in linotyping) and to asemble the type automatically in long shallow trays known as galleys. The monotype has a keyboard similar to that of a typewriter but with some 200 keys. Unlike the linotype, which does the whole typesetting job, the monotype keyboard machine only perforates a narrow roll of paper for use later in the separate casting machine.

The workers who operate the keyboard and make the many different adjustments needed are called monotype keyboard operators (sometimes simply monotype operators). They are a rather small occupational group; only about 6,000 were employed in 1940. The number now is probably closer to 8,000. Most of them work for book or periodical houses; some few, for job and service shops.

In general, qualifications for employment are the same as for linotype operators.

Outlook. In few, if any, parts of the country where monotype operators are employed will qualified journeymen have the slightest difficulty in finding a job at any time in the foreseeable future—certainly, as long as general conditions remain favorable. In addition, employers will have some openings for apprentices; more, as the number of craftsmen grow. The actual number of training opportunities will not be large, however, because the needs are likely to remain small at best.

The long-range trend in employment in the field is upward. Men already in the trade and those who enter it in the near future should have a good chance of holding their jobs indefinitely. Those who are adept in hand composition and linotyping, as well as monotype keyboard operation, are likely to have the greatest job security.

Big printing centers will generally offer the most job openings but, at the same time, the keenest competition for employment. In the long run, more and more jobs are likely to be found in smaller cities, to which book and job plants have been moving gradually over the years.

Earnings and Unionization. Wage rates for monotype keyboard operators are generally the same as for linotype operators outside the newspaper industry.

A large proportion, if not the great majority, of monotype keyboard operators are represented by the International Typographical Union (A. F. of L.).

Monotype Caster Operators

Workers in this occupation operate the monotype casting machines previously referred to, which cast and assemble type automatically, guided by the perforations in the rolls of paper prepared by the monotype keyboard operators. Caster operators not only adjust and tend the machines but usually are required to know the mechanism in order to make repairs. In shops having several casting machines, the operator may supervise unskilled workers who tend the machines.

Up to the present time, only one caster operator has been employed to about every three keyboard operators, taking the printing industries as a whole. The occupation is, therefore, very small, employing only about 2,000 workers in 1940 and certainly not more than twice that number at present. The types of plants using caster operators are, of course, the same as for keyboard operators—chiefly book and periodical houses and, to some extent, job and service shops.

Qualifications for Employment. Most newcomers to this occupation learn to operate the machine at a monotype school. Training is then rounded out on the job. This experience is especially needed for the most-skilled and best-paying jobs in the occupation, which require an understanding of the mechanism of the caster and ability to make adjustments and repairs. Persons entering the occupation should be physically strong and in good health.

Outlook. Employment opportunities for experienced workers are expected to be good in this occupation, especially during the next few years. Employment is likely to increase at an even faster rate than among keyboard operators in the near future, and to have a continued upward trend over the long run. There will be more openings for newcomers than before the war, although for only a limited number in this small occupation, especially in the face of the shortage of monotype operators. Competition for jobs is likely to be keen.

Earnings and Unionization. Most monotype-caster operators have about the same wage rates as linotypists, monotype-keyboard operators, and composing-room craftsmen outside the newspaper industry generally. However, caster operators without responsibility for adjustments or repairs earn less.

A large proportion, if not the great majority, of operators are represented by the International Typographical Union (A. F. of L.).

Proofreaders

These workers carry the responsibility for guarding against errors in the final printed product. For this purpose, it is customary to make proofs of type set-ups and read these carefully against the original copy. In small shops, journeyman typesetters and advanced apprentices may do the proofreading. In most large plants, however, particularly in the newspaper, book, and periodical industries, there are special proofreaders.

The work is done in one of two ways. Either the proofreader puts the proof and the copy side by side and reads one against the other, a line at a time, or he has the material read to him by a copy holder while he follows the proof. Where there are errors, he notes the corrections needed, using standard proofreaders' marks.

Qualifications for Employment. Workers usually enter the occupation from another composing-room job or a front-office job with the same company. Skilled compositors and composing-machine operators who are no longer able to do typesetting at the speeds required may take positions as proofreaders. Those who do so are allowed to keep their journeyman status, at least in union shops.

Knowledge of grammar, spelling, and punctuation is very important to help the proofreader find and correct errors. The work requires good hearing and good eyesight.

Outlook. Increased printing activity will mean rising employment of proofreaders in the next few years. Altogether, about 5,000 proofreaders were employed in 1940, including a good many women; the number employed is estimated to be around one-fifth higher now. Though most of the job openings arising from turn-over will be filled by workers already in the printing industries, there will be a few openings for veterans and others with experience related to proofreading. Persons completely new to the field will have little, if any, chance for jobs.

The long-range trend in employment will probably continue to be upward. Those already in the occupation and those who enter it in the near future should have a good chance of holding their jobs indefinitely.

Earnings and Unionization. Wage rates for proofreaders in union shops are generally the same as for hand compositors. (See p. 9.) Nonunion shops are likely to pay less, particularly to women. Furthermore, some union contracts provide lower scales for proofreaders who have never qualified as hand compositors.

Electrotypers and Stereotypers

From the composing room, type forms often go to the electrotyping or stereotyping department (or to an independent service shop doing such work for printing firms). Electrotyping and stereotyping are two different processes, which have the same purpose—making metal press plates from the type forms. One reason why it may be necessary to use such plates, instead of printing directly from the forms, is that a number of duplicate plates may be needed (any number can be turned out by either electrotyping or stereotyping). When a large edition of a book or magazine is printed, several plates must be used one after the other to prevent the printing surfaces from becoming too worn to make clear impressions. By means of duplicate plates, printers can also use several presses on the same job at the same time and thus finish a big run quickly. This is especially important in daily newspaper plants, which have to rush many thousands of papers onto the streets with news that is no more than an hour or two old. Furthermore, the rotary presses used in many big plants require curved plates (which can be made by either process), and type forms are always flat.

In electrotyping, a wax mold of the type form is usually made, though lead or some other material may be used instead. To make a wax mold, the electrotyper first lays the type form on the bed of a power molding press. He then places a metal sheet coated with wax on top of the press and applies the pressure, thus obtaining an impression of the type form in the wax. The next major steps are to give the mold a thin coating of copper by pouring copper-sulfate solution over it (sometimes nickel is used instead) and to suspend it in a battery tank filled with the same solution. When the current is turned on, a shell of copper is deposited on top of the copper coating. When stripped from the mold, backed with metal, carefully finished, and mounted, this shell becomes a plate ready for use in the pressroom.

The stereotyping process is much simpler, quicker, and less expensive than electrotyping, but it does not yield as fine a plate. Stereotypers make molds of papier mâché (a strong material composed of paper pulp) instead of wax or lead. This work involves placing a damp papier mâché pad on top of the type form and running both through a rolling machine. After the paper mold has been dried, it is used in casting a composition-lead plate, which needs only trimming to be ready for the pressroom.

Journeyman electrotypers and stereotypers must know how to handle all the tasks involved in their respective processes, although in practice they are often assigned to only one phase of the work.

Electrotypers work mainly in large book and periodical industries. Stereotypers work mainly in newspaper plants or shops servicing newspaper publishers. Some large commercial shops and other kinds of printing plants also use a few men in these occupations.

Qualifications for Employment. To qualify for either type of work, a 5- or 6-year apprenticeship is usually required. The training is quite different for each trade; rarely do journeymen change from one occupation to the other.

Young men who wish to become electrotyper or stereotyper apprentices need the same educational qualifications as are required for all printing trades. In addition, mechanical training and courses in chemistry and metallurgy are useful.

In workrooms where electrotyping or stereotyping is done, there are frequently fumes and dust and the temperature and humidity are often extremely high. Moreover, the work involves lifting of very heavy plates and type forms. Persons entering the occupations should be sufficiently strong and healthy to work under these conditions.

Outlook. Journeymen electrotypers and stereotypers will generally find it easy to get jobs in the next few years. There will also be some training opportunities, though not as many as during the first year or two after the war. Some men with all-round experience and managerial abilities will be able to go into business for themselves, with fair chances of success. But these are small occupations employing in early 1949 roughly 10,000 journeymen and probably not more than 1,000 apprentices. The aggregate number of job openings and business opportunities will, therefore, number only two or three hundred at best each year.

The long-range trend in employment is upward in these occupations. Men already in the trades and those who enter them during the next few years should have a good chance of holding their jobs indefinitely.

Jobs and business opportunities will seldom be found outside large industrial areas and will be mainly in or around New York, Chicago, Philadelphia, Detroit, and Cincinnati.

Earnings and Unionization. Wage rates for electrotypers tend to be higher than those for any other printing trade, except photoengravers. Stereotypers, for the most part, have considerably lower pay.

The average union wage scale for electrotypers in effect on January 2, 1948, in the principal cities in which they are found in book and job printing was $2.27 an hour. Rates ranged from $1.55 an hour in Buffalo, N. Y., to $2.50 an hour in Newark, N. J., and Chicago, Ill. About half of the scales were $2 an hour and up.

Newspaper stereotyper rates showed almost the same range, from $1.55 in Wichita, Kans., to $2.47 an hour in Boston, Mass. But the average was almost 25 cents an hour less than for electrotypers, and well over half the scales fell within a range of $1.80 to $2.10 an hour.

In both occupations, the proportion of workers unionized—by the International Stereotypers' and Electrotypers' Union (A. F. of L.)—is extremely high. This organization is one of the six major unions of printing workers.

Photoengravers, Rotogravure Photoengravers, and Lithographic Occupations

Photoengravers enter into the printing process when copy to be reproduced by letterpress includes pictures or designs. As has already been mentioned, the photoengraving department supplies the composing room with any needed plates of illustrations and other material that cannot be set up in type. On these plates, the printing surfaces stand out in relief *above* the nonprinting spaces, as do the letters on the accompanying type.

Rotogravure photoengravers also make plates for use in reproducing pictures, but these are gravure plates with the image etched *below* the surface. The printing has to be done on special rotogravure presses, and often the entire process, from preparation of the plates through printing, is carried out in separate plants specializing in this kind of work.

Any kind of printing job that can be done by letterpress or gravure can be done also by lithography (or offset printing). Which method is used, however, depends on many practical considerations. Lithography has special advantages when the copy to be reproduced includes photographs, drawings, or paintings, and particularly when these are in color. In present-day lithographic work, the plates are processed photographically, and the method is often referred to as photolithography. There are a few types of work—in preparing posters, for example—in which some of the plates are still made by hand.

Photoengravers

Photoengravers are skilled journeymen, able to handle all the operations involved in their process. Sometimes, the entire job of producing a plate is done by one man. More often, however, especially in large shops, the work is divided among a number of photoengravers, who may then be known by such titles as photographer, printer, etcher, finisher, router, blocker, or prover, according to the particular phase of the work handled.

The photographer starts the process by photographing the material to be reproduced, using the necessary screens or color filters, and develops the negative. Making a print from the negative on a metal plate coated with sensitized solution is the job of the printer. Since the coating over the image areas of the plate is hardened by exposure to light during the printing process or by further chemical treatment, these areas are protected against the acid into which the plate is put by the etcher. The background areas are, however, etched away by this acid, leaving the image standing out in relief. After that, there are still a few more operations to be carried out—including finishing (careful inspection and touching up with hand tools), routing (cutting away metal from the nonprinting parts of the plate to prevent them from touching the inking roller during printing), blocking (mounting the engraving on a wooden block to make it the right height), and proving (printing a sample copy on a proof press).

Upwards of 10,000 men were employed as photoengravers in 1948, including both all-round men and specialists. The largest number work in service shops, whose main business is making photoengravings for use by others; many journeymen have their own shops. Newspaper plants, book and periodical houses, and the United States Government Printing Office and Bureau of Engraving and Printing also employ a considerable number of photoengravers.

Qualifications for Employment. A 6-year apprenticeship is generally required to become a journeyman. The training covers all phases of the process and includes a large amount (864 hours) of classroom instruction. Registered apprentices numbered perhaps 1,800 at most in late 1948, when photoengraving was the on-the-job training objective of some 1,500 veterans.

Since photoengravers' duties involve constant close work with their eyes, good eyesight is essential in this occupation. Because of the work with acids and other chemicals which give off fumes, the occupation is not a good one for people with respiratory disabilities. Many employers require physical examinations for prospective photoengravers, testing both eyes and lungs. Among the types of school training which are helpful, in addition to those needed for all printing trades (see p. 6), are courses in chemistry and metallurgy.

Outlook. Employment of photoengravers has been rising steadily since the end of the war and will probably continue to do so in the immediate future.

In 1939, journeyman photoengravers numbered around 10,000, but many were unemployed. There was, on the average, 1 apprentice to every 10 or 12 employed craftsmen, the ratio varying from area to area and shop to shop; some shops offered no training opportunities of any kind.

During the war, a shortage of skilled workers, trainees, and trainee replacements developed, primarily because of workers going into the armed forces and transferring to war industries. To make up for the labor shortage, meet normal replacement needs, and handle the increasing demand for photoengraving, employers have needed all qualified journeymen who have been available in the postwar period thus far and many more trainees than usual. The outlook continues to be generaly favorable, although reduced apprenticeship opportunities are indicated for the near future. At best, the number of openings for trainees will probably not exceed a hundred or so each year in the entire country in the next year or two. Some persons wishing to go into business for themselves may find favorable opportunities to do so; generally, those with good all-round experience in the field will have the best chances of success. In the longer run, employment is likely to level off and become fairly stable. Most job and business opportunities—but also the keenest competition—will probably be found in the large cities of New York, Illinois, and Pennsylvania.

Earnings and Unionization. Photoengravers have, on the whole, higher wage rates than most any other group of printing craftsmen. Union wage scales in the occupation on January 2, 1948, in the cities covered, ranged from $1.63 an hour for newspaper photoengravers in Richmond, Va., to a top of $2.84 an hour for at least some tint layers in this work in the Boston newspaper industry. (The latter rate was the highest reported for any group in the country included in the survey). Well over half the scales fell within a range of $2 to $2.40 a hour. The average rate was $2.36 in book and job work, $2.40 in newspaper plants.

Photoengravers are almost completely organized, by the International Photo-Engravers' Union of North America (A. F. of L.), one of the six major unions of printing workers.

Rotogravure Photoengravers

Rotogravure work is a relatively new process, which was being used increasingly before the war. So far, however, never more than a few hundred journeymen have been employed in it in the entire country.

These men are a very highly skilled group. Like regular photoengravers, they are required to know all phases of their process, although they usually specialize in one of them. The operations which they handle are much like those involved in photoengraving, except that a positive (instead of a negative) is used in making the plate, and it is the image (rather than the background) areas which are etched away.

A few large newspaper and commercial plants have departments which reproduce pictures by this method. However, rotogravure men are employed mainly in independent rotogravure plants. Most of them work for half a dozen big firms which handle a large proportion of all rotogravure work.

Qualifications for Employment. It is possible to enter the occupation either by a 6-year apprenticeship in a rotogravure shop or by transferring from photoengraving. Photoengravers are usually required to complete a probationary training period before being classified as skilled rotogravure men. The qualifications needed by apprentices are the same for rotogravure work as for photoengraving. A number of the 1,700 or so young people, reported to be in training under registered "photoengraving" programs are probably seeking rotogravure status.

Outlook. There has been little room for newcomers as rotogravure photoengravers in the last year or so. During the war, the amount of rotogravure printing was much reduced, and a large proportion of the journeymen and apprentices either went into the armed services or transferred to photoengraving. However, the volume of rotogravure work has been rapidly returning to prewar levels—it may already have surpassed it—and there has been frequent need for additional workers. As yet, openings have been filled in most instances by former workers returning to the trade or by letterpress photoengravers transferring. Since the occupation is expected to go on expanding for an indefinite period, there should be increasing opportunities for newcomers in the years ahead, though only a very few each year.

Earnings and Unionization. Rotogravure men are among the best-paid craftsmen in skilled printing work. In general, their wage scales are above even the comparatively high rates for photoengravers doing letterpress work. In the regional data below, rates for both are included under photoengravers.

Practically all workers in this trade are represented by the International Photo-Engravers' Union (A. F. of L.).

Lithographic Occupations

The largest group of lithographic workers is made up of platemakers (upward of 5,000 in 1948); the smallest group, cameramen, with about a fourth as many workers. Other occupational groups are artists and letterers, pressmen, and press assistants. This section deals with the first three of these groups. Lithographic pressmen and helpers are covered by the section on pressroom occupations. (See p. 18.)

CAMERAMEN. Cameramen who photograph the copy to be printed are highly skilled workers. As a group, they do several different kinds of photography, developing, and related work in black and white or color; the photographing of drawings or photographs, as well as taking original shots; developing glass plates or negative paper or film. The individual cameraman, nearly always, specializes in one type of photography.

ARTISTS AND LETTERERS. After negatives have been made and developed, they frequently have to be retouched, to lighten or intensify certain parts. This is done by hand, with chemicals and dyes, and is one of the many highly skilled operations handled by craftsmen in the art department. Artists may have to correct colors in the final press plates. They also draw posters or other pictures on stone or metal plates or on special paper, on the comparatively rare occasions when hand methods are used in place of photolithography. Lettering is usually done by hand, although sometimes it is done by machine. To be journeymen, artists have to be adept either in one or more of the various retouching methods or in hand drawing with lithographic crayon. Like

cameramen, they are customarily assigned to one phase of the work and may then be known, for example, as dot etchers (who do a highly specialized type of retouching), retouchers, crayon artists, or letterers, depending on the particular job.

PLATEMAKERS. In photolithography, negatives and positives, made by cameramen and corrected by artists, are transferred onto press plates by workers in the platemaking (chemical or processing) department. There a plateman first places a metal plate with a light-sensitive coating in a vacuum frame or photocomposing machine; puts a photographic negative (or, sometimes, a positive) on top of it; and makes an exposure under an arc lamp. The plate is then developed and chemically treated so as to make the nonimage areas repellent to grease when damp, while leaving the image areas receptive to it.

The foregoing indicates only a few of the main steps in this highly complicated and technical process. Platemakers in small shops often perform all the different operations. Those in large shops, however, are likely to be more specialized; they may, for example, operate only a vacuum frame or a photocomposing machine.

Besides platemakers using these photochemical methods, there are some who do hand transferring—although this process has been largely displaced by photomechanical platemaking. The hand-transfer platemaker places special transfer paper on a design and runs both through a transfer press. Next, he carefully removes this paper, which now has on it the image to be reproduced, places it on the press plate, and presses the design into the grain of the plate. Finally, he treats the plate in various ways. He may also have other duties to perform.

Qualifications for Employment. An unusually heavy proportion of lithographic workers are in skilled occupations and apprenticeship training. To become an all-around craftsman generally requires a 4- or 5-year apprenticeship covering all phases of the process. Beginners are usually taken on as helpers (or "assistants") and promoted to apprentices after a year or two, if they show promise and there are openings. Besides on-the-job training, many plants give supplementary courses for their workers. Courses in lithography are offered also in trade schools and under other auspices.

A high-school education is needed for most jobs. Work in the art, engraving, and camera departments calls for natural drawing ability and an eye for color and design, as well as technical ability. In platemaking, manual dexterity and an interest in chemistry are more important. Many types of physical handicaps are not bars to employment in offset jobs.

Outlook. Qualified craftsmen should have little trouble getting jobs in lithographic occupations during the years immediately ahead. The labor shortages which developed during the war have been relieved considerably since VJ-day and are no longer general. But this is a fast-growing process, perhaps the most rapidly expanding graphic art. Recent improvements, affecting the life of plates and the speed of presses, have been enabling the industry to gain headway in the important mass magazine field.

Employment opportunities will probably be very good also for men with training and experience in semiskilled lithographic occupations. In addition there will be openings for trainees—but not many in any of these small occupations in any one year. The number of registered apprentices in the lithographic field (excluding pressmen) approached 500 in early 1949, including, no doubt, many veterans having lithography as their on-the-job training objective under the GI bill of rights.

There will be favorable opportunities for a few men to open their own shops. The initial investment is greater than in letterpress printing, and the chances for success are likely to be best in localities which do not already have well-established lithographic businesses.

The long-run outlook is for continued rise in employment in all major lithographic occupations. Employment is increasing in plants specializing in lithographic work, and a growing number of letterpress plants are setting up lithographic departments. Both these trends are expected to continue.

By far the largest numbers of job openings during the next few years, probably half of the total, will be in three cities—New York, Chicago, and San Francisco. Humid conditions hamper offset progress, particularly in the South. Opportunities will become more and more widespread, however, as time goes on.

Earnings and Unionization. Scattered data from sources other than the Bureau of Labor Statistics indicate postwar union wage scales in lithographic occupations falling largely within a range of $1.50 to $3 an hour, with rates of journeymen pressmen tending to be higher than those of other workers.

A large proportion, if not a majority, of offset craftsmen and operatives belong to the Amalgamated Lithographers of America, CIO, the only printing union so affiliated and the only one organized on an industrial basis.

Pressroom Occupations

Type forms from composing rooms, press plates from electrotyping and stereotyping departments, and rotogravure and lithographic plates all go to a pressroom when the time comes for the actual printing to be done. In small shops, this department may consist of only one or two small presses in a back room or corner of the shop. In big plants, however, pressrooms are large, with many workers and, frequently, huge presses. Often these machines are so heavy and create so much vibration that the department has to be located on the ground floor or in the basement.

Pressmen

Skilled pressmen are the key workers in the department. Their basic duties are to "make-ready" and then tend the presses while in operation. The object of the make-ready, which is one of the most delicate and difficult parts of the work, is to ensure printing impressions that are distinct and even, and neither too dark nor too light. This is accomplished by such means as placing pieces of paper of exactly the right thickness underneath low areas of the press plate or type form to level it and attaching pieces of tissue paper to the surface of the cylinder or flat platen which makes the impression. Pressmen also have to make many other adjustments—for example, those controlling margins and the flow of ink to the inking roller. In some shops, they are responsible not only for tending the presses but for oiling and cleaning them and making at least minor repairs. In many cases they have assistants whose work they supervise.

Within this broad outline, pressmen's work varies greatly from one type of shop to another, because of great differences in the kinds and sizes of presses used. Small commercial shops, many of which are owned and run by pressmen themselves in partnership with compositors, generally have small and relatively simple platen (or job) presses that are often fed paper by hand. At the other extreme are the big newspaper plants with their tremendous web-rotary presses. These giant presses are fed paper in big rolls (or webs). They print the paper on both sides by means of a series of cylinders; cut the pages and assemble and fold them; and finally count the finished newspaper sections, which emerge from the press ready for the mailing room. To do all this automatically requires many different mechanisms, all of which must have frequent attention while a run is being made. Presses of this kind are, therefore, operated by crews of journeymen and less-skilled workers, under the direction of a pressman-in-charge.

Another type of press on which men specialize is that used in offset printing. An offset press has three cylinders: The first carrying the curved plate; the second, a rubber blanket; and the third, the paper on which an impression is to be made. The plate does not print directly onto the paper; instead, it transfers the impression to the rubber blanket around the second cylinder which then offsets the image onto the paper. Another special feature is the dampening rollers which pass over the plate, before each inking, to prevent the greasy ink from adhering to the nonprinting areas of the plate. Both these features create extra complications for the pressman. Experts emphasize also that, in printing by this method, "kiss" pressure only is needed (much less pressure than is involved in relief and gravure printing), and that delicate and skillful adjustments by the pressman are required to attain exactly the right pressure.

Pressmen may specialize also in operating direct lithographic presses, which make impressions on paper directly from lithographic plates instead of using the offset principle. There are, in addition, other types of presses, including the rotogravure press, a rotary press with a "doctor" blade which scrapes the surplus ink off the surface of the plate.

Qualifications for Employment. To become a skilled pressman requires 3 to 5 years of apprenticeship. Usually, men receive training on only one type of press, and opinion differs as to how readily journeymen can become skilled on other types of presses. The length of the apprenticeship and the content of the training largely depend on the kind of press involved. For work on an offset press, for example, the apprenticeship period is almost always 5 years.

Apprentices are generally chosen from among the press assistants and others already employed by the company. They must have completed at least the eighth grade in school; some employers

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require high-school graduation. Since they will often have to blend their own inks, a knowledge of color is necessary. Courses in art are, therefore, very helpful.

Physical strength and endurance are necessary for work on some kinds of presses, where the pressman has to lift heavy type forms and press plates and be on his feet all day. Another quality needed is mechanical aptitude, to assist the worker in making adjustments and repairs to the presses.

Press Assistants

The duties of press assistants range from merely feeding sheets of paper into hand-fed presses to helping pressmen make ready and operate large and complicated rotary presses. Workers whose main responsibility is feeding are often referred to simply as feeders.

Nonjourneymen on web-rotary crews in newspaper plants are commonly known as flyboys. They pick up the newspapers as they come out of the press and load them onto hand trucks; they also wheel the trucks out of the pressroom and do other work.

The ratio of assistants to pressmen varies greatly from one establishment to another, depending on size of the plant, type of press used, and other factors. Many shops are too small to have any pressroom helpers.

Outlook. *Pressmen.*—Employment in the occupation will rise considerably in the next few years and probably more slowly thereafter, with rather limited opportunities in lithographic work, however, outside New York City, Chicago, and San Francisco.

Pressmen make up the third largest group of printing craftsmen. In 1940, about 33,000 were employed. Only hand compositors and linotype operators were more numerous. A shortage of both skilled pressmen and apprentices developed during the war. To make up for this shortage, meet normal replacement needs, and handle the actual and anticipated increases in printing of all kinds, the industry has hired many thousands of men for presswork since VJ-day. During the next few years, it will probably continue to require virtually all qualified men likely to be available. In addition, there will be many hundreds of training opportunities. About 95 area training programs in the country, and close to 4,000 registered apprentices in these and other arrangements, are reported by the Bureau of Apprenticeship for early 1949.

The long-range trend of employment in the occupation is upward. Technological developments have tended to increase the need for skilled "specialists" on one type of press (as contrasted to the all-round men previously required).

Press Assistants.—With one helper to every three or so journeymen, on the average, several hundred job openings for press assistants may be expected each year for the next few years. After that, there will probably be much fewer openings.

Before the war, the printing industries tended not to replace all the press assistants they lost through turn-over. It is likely that this tendency will recur, if it has not already begun to do so, after the current need for labor has been met, and that employment in the occupation will resume its long-range downtrend. However, lay-offs will probably be made only in exceptional circumstances.

Earnings and Unionization. Wage rates of pressmen vary with the make and style of press operated, as well as with the type of printing plant and other factors. They tend to be highest in the newspaper industry, according to the union wage scales for pressmen cited in detail in the State and regional sections of this pamphlet.

A range of $1 to $2.80 is indicated for the four skilled groups covered by the Bureau of Labor Statistics (scales in effect on January 2, 1948): newspaper "journeymen pressmen," and "pressmen-in-charge," and book and job cylinder pressmen and platen pressmen.[5] Rates for book and job "press assistants and feeders" ranged from 60 cents for some workers in Little Rock, Ark., to $2.44 for some in Chicago. More than half of the journeyman scales were between $1.75 and $2.15; helper rates, between $1.30 to $2. The averages were: newspaper journeymen pressmen, $2.07; newspaper pressmen-in-charge, $2.23; book and job cylinder pressmen, $2.12; book and job platen pressmen, $1.90; book and job press assistants and feeders, $1.70.

In general, rates of offset press workers, especially journeymen, in effect on January 2, 1948, may have been as high or higher than those of most other categories of pressmen and assistants, according to very limited data from sources outside the Bureau of Labor Statistics.

Pressroom workers are usually covered by union agreements. Practically all the letterpress and rotogravure pressmen and assistants who are organized belong to the International Printing Pressmen's and Assistants' Union of North America (A. F. of L.); lithographic press workers are in the Amalgamated Lithographers of America (C. I. O.), for the most part. As previously indicated, the latter group is the only printing union in the C. I. O., and the only one organized on an industrial basis.

[5] In the Bureau of Labor Statistics data, the so-called "cylinder pressmen" group include also other nonplaten pressmen.

Bindery Occupations

Many products are finished when they leave the pressroom. This is true of a wide variety of items produced by job shops—business forms, printed stationery, labels, advertising flyers, and so forth. Newspapers, except the few that are bound for libraries, never see a bindery department. Nevertheless, binderies play a part in the manufacture of many products besides books. The sewing or stapling of a magazine, pamphlet, or even a small calendar is considered a bindery operation.

Bookbinders

Making a book out of the big, flat sheets of paper that come into the bindery from the pressroom is by far the most complicated type of bindery work. The first step is to fold the printed sheets, each of which contains many pages, so that these pages will be in the right order. When so folded into sections of 16 or 32 pages, the sheets are known as signatures. The next steps are to insert any illustrations that have been printed separately, to assemble the signatures in proper order, and to sew them together. The resulting book bodies are shaped in various ways, usually with power presses and trimming machines, and fabric strips are glued to the backs to reinforce them. Sometimes the edges of the pages are gilded or colored. Covers are glued or pasted onto the book bodies, after which the books undergo a variety of finishing operations and, frequently, are wrapped in paper jackets.

Skilled bookbinders seldom handle all these different tasks, although many journeymen have had training in all of them. Especially in large shops, bookbinders are likely to be assigned to one or a few operations, most often to the operation of complicated machines.

The majority of journeymen are employed in shops whose main business is bookbinding. However, a good many work in the bindery rooms of large book, periodical, and commercial printing plants. Some are employed in libraries, where the work is done mainly by hand and also differs in other respects from that performed elsewhere.

Qualifications for Employment. Completion of a 4-year apprenticeship is usually required of men seeking to qualify as skilled bookbinders. Apprenticeship programs may vary considerably between the different types of shops. Where large quantities of books are bound on a mass-production basis, emphasis is on the most modern machine methods. Where fine hand binding is done, the training is mainly in hand methods, including artistic designing and decorations of leather covers.

Outlook. Employment in the occupation is likely to resume its long-run downtrend in the next few years, if it has not already begun to do so. Bookbinders make up the fourth largest group of craftsmen. Rough estimates suggest that there were in 1939 about 20 to 25 thousand bookbinders. Many were unemployed or could find only bindery or other jobs paying less than journeyman bookbinder rates. Now there are probably no less than 30,000 at work, with few, if any, in nonjourneyman positions, and unemployment is low. In addition, many new persons are in training under registered programs. There were at least 25 such area arrangements reported by the Bureau of Apprenticeship for 1948.

To make up for the labor shortages which developed during the war, meet normal replacement needs, and handle the increased demand for bindery services, more qualified journeymen and trainees have been required during the postwar years than for many years prior to the war. Men with bookbinding skills, plus supervisory and managerial abilities, have found some immediate openings in salaried positions or better opportunity for advancement to such jobs.

The outlook is not especially favorable, certainly not by comparison with that for other printing occupations. In particular, there is no evidence that the long-run downtrend in employment has been reversed.

Most job openings—but also the keenest competition for jobs—will probably be found in large cities, notably in New York, Ohio, Illinois, and New Jersey.

Earnings and Unionization. Wage scales in this occupation tend to be below the average for all printing trades. The range of union rates (January 2, 1948) for journeymen bookbinders

in book and job printing, reported by the Bureau of Labor Statistics for the principal employing cities, was from about $1 (in Binghamton, N. Y.; Indianapolis, Ind.) to $2.44 (for some craftsmen in Chicago). More than half the scales fell within a range of $1.60 to $2. The average union rate was $1.91. Additional information is contained in the State and regional sections of this report.

Although employees in binderies are not so highly organized as other groups of printing workers, many skilled bookbinders are represented by the International Brotherhood of Bookbinders (A. F. of L.), one of the six major unions of printing workers. A higher proportion of journeymen than of nonjourneymen bindery workers belong to this union.

Bindery Workers

In many binderies, especially large ones, a great part of the work is done by employees trained in only one operation or in a small group of related tasks. These semiskilled workers, often classified as "bindery workers" or "bindery hands" are mostly women, though a few are men. Women handle a variety of hand or light-machine operations, such as hand-folding, pasting-in of inserts, assembling signatures by hand, machine-sewing, glueing fabric reinforcement on signatures, and feeding machines. Men are usually assigned to more intricate machine jobs; they may operate assembling, trimming, stamping, and many other types of machines.

Bindery workers are by far the largest group of semiskilled workers in the printing and allied industries. They are employed both in independent binderies and in the bindery departments of big printing plants.

For inexperienced men and women entering the occupation, a training period, which may be as long as 1 or 2 years, is frequently required. In union shops, there are always formal training programs.

Outlook. Employment has risen considerably since VJ-day. The likelihood is for stability in number of jobs, if not further gains, in the next year or two.

In 1939, roughly 70 to 80 thousand women and men were in bindery work. Many bindery hands were jobless. During the war, however, a shortage developed, mainly because of the competition for labor from war industries and because of men going into the armed forces. To make up for the shortage, meet normal replacement needs, and handle the increase in bindery work, employers have required increasing numbers of experienced workers and many more newcomers than usual since mid-1945.

In the past several months or longer, openings have probably become fewer. Already there may not be jobs for all those seeking work. The long-range trend in employment, however, is upward, and workers who now have a job or get one in the immediate future have a good chance for fairly steady work indefinitely, so long as general business activity is favorable.

Jobs will be found in most sections of the country, The greatest number of openings—also the most competition for them—will be in the large cities of New York, Ohio, New Jersey, and Illinois.

Earnings and Unionization. Women bindery workers have the lowest wage rates of any group of production workers in the printing and allied industries. Even union scales—those, for example, in effect in book and job printing on January 2, 1948, in many cities—were rarely over $1.20 an hour; more than half of them were well under $1. No scale, however, was below 63 cents (found in Baltimore); the high, $1.39, was in effect in San Francisco. With the rates in the more concentrated areas of employment commonly at the upper end of the scale, the weighted average was $1.06.

Men doing semiskilled machine work are generally paid somewhat more than the usual top rate for women. The few performing (semiskilled) hand operations are paid rates similar to those for women workers.

Although employees in binderies are not so strongly organized as other groups of printing workers, many bindery workers are represented by the International Brotherhood of Bookbinders (A. F. of L.), one of the six major unions of printing workers.

EMPLOYMENT OUTLOOK IN PRINTING OCCUPATIONS BY STATE AND REGION

NEW ENGLAND REGION

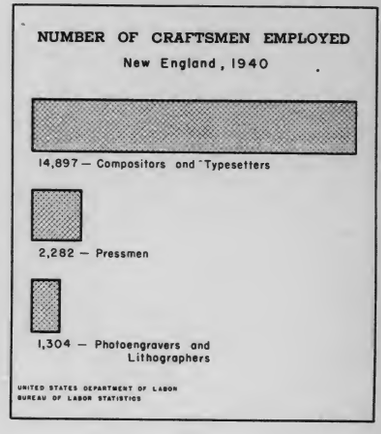
(Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont)

Summary. Little change in employment expected. Most new job openings in next 5 to 10 years will result from deaths and retirements among the older workers.

Background. New England is, in general, not a very important section for printing work. In no type of printing does it account for a large share of the Nation's total. Massachusetts is by far the largest source of jobs in the region. In 1940, about 12,000 printing craftsmen, or about 5 out of every 100 in the country, were employed in this State. Connecticut, the second ranking State in New England, had around 4,000 printing craftsmen. In both these States, compositors and typesetters were by far the largest occupational group.

The other States in the region contribute only an insignificant number of printing jobs. Rhode Island was the only one of them to employ more than 1,000 printing craftsmen in 1940.

In every State in the region the greatest volume of output was by plants engaged in newspaper publishing and printing. In Massachusetts this branch of the industry was responsible for about 40 percent of the total printing output of the State, while in New Hampshire it accounted for 95 percent. Massachusetts produces a fairly substantial volume of general commercial job printing, amounting to 20 percent of the total output, a substantial quantity of books and greeting cards, and a fair amount of bookbinding. Thirty percent of the printing work in Connecticut in 1939 was general commercial printing. A small amount of book printing is carried on in Connecticut. These same general proportions also hold true for employment in the region's printing shops. The fol-



lowing table shows the employment in each category in 1939:

Type of establishment	Employment, 1939	Percent
All establishments	41,847	100.0
Printing and publishing [1]	21,578	51.5
Newspapers	16,276	38.9
Periodicals	1,683	4.0
Books	3,619	8.6
Job printing	9,452	22.6
Greeting cards	2,337	5.6
Bookbinding	3,511	8.4
Service shops	2,829	6.8
Photoengraving	996	2.4
Typesetting	725	1.7
Engraving	621	1.5
Electrotyping and stereotyping	487	1.2
Lithography	1,692	4.0
Gravure		
Shops with output under $5,000	448	1.1

[1] Excludes publishing without printing.

Outlook. There is no indication of any significant increase in the number of printing jobs in this region as a whole. Although there was some gain in the number of jobs in the area between 1939 and 1947, the percentage increase was much less than the national average. Massachusetts, the leading State in the region, increased its employment by only about 5 percent, in contrast to the national increase in printing and publishing of 28 percent.

As has been indicated, most of the region's printing work is in newspaper printing plants, and no large expansion of this branch of the industry can be expected in the area. A similar trend is evident in commercial printing although the total volume of jobs should hold up as long as business conditions are favorable. Almost all of the job openings that do occur will be to fill vacancies resulting from deaths or retirements or workers leaving the printing trades for other reasons. A fairly large proportion of the workers are in the older age group, in which deaths and retirements are most numerous, and it is likely that this will create a substantial number of openings in the next 5 to 10 years. However, a substantial number of apprentices, as many as 500, is now in training. A large share of the available openings will be taken up by successful trainees in this group.

Earnings. The highest reported union wage scales in the area are found in Boston; the lowest, in Portland, Maine. No rate in Portland exceeded $1.71 an hour; relatively few were as low as this anywhere in the region or in the country. Elsewhere in New England wage scales were mostly upwards of $1.60 to a high of $1.90. The lowest rate, 80 cents, was, of course, for bindery women (in New Haven, Conn.).

Complete available data for New England follow:

Occupation	Connecticut, New Haven	Maine, Portland	Massachusetts			New Hampshire, Manchester	Rhode Island, Providence
			Boston	Springfield	Worcester		
Newspaper shops:							
Hand compositors and machine operators	$1.89	$1.63–1.71	$2.40		$1.87	$1.87	$2.30
Stereotypers	1.75	1.71	2.47		1.89	1.87	2.24
Photoengravers			2.58–2.84	$1.87	2.08	1.71	
Journeymen pressmen	1.80	1.71	2.00–2.18		1.80		1.95
Pressmen-in-charge	1.90		2.14–2.33		1.92		2.08
Book and job shops:							
Hand compositors and machine operators	1.75	1.13	1.81		1.60		1.70
Electrotypers	2.00		1.90–1.92	2.00	1.90		1.90
Photoengravers	2.00		2.27	1.87		1.71	
Cylinder pressmen	1.70–1.88	1.11–1.23	1.81–1.96			1.38–1.50	
Platen pressmen	1.58	1.00	1.63–1.72			1.30	
Press assistants and feeders	1.35–1.48		1.02–1.70				
Bookbinders	1.65		1.81	1.73			
Bindery women	.80–.93		.98				

MIDDLE ATLANTIC REGION

(New Jersey, New York, Pennsylvania)

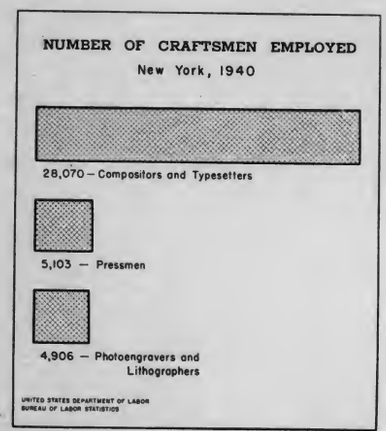
New York

Summary. New York will retain its dominant position in the printing field. Several thousand replacement openings in the next few years, but large numbers are already in training.

Background. New York City is the world's greatest printing center. There are also many printing jobs in the rest of New York State. In 1940, over 40,000 printing craftsmen were employed in the State. Compositors and typesetters, with 28,000 employed, were the largest single occupational group. There were about 5,000 printing pressmen and plate printers and nearly as many photoengravers and lithographers. As many as three-fourths of the total number of craftsmen were in New York City. The larger printing centers outside of New York City included Buffalo, Rochester, Syracuse, and Albany.

In terms of dollar value of output, New York is one of the Nation's leading States in every type of printing activity. Its printing shops turned out a fifth of the total value of printed products in 1939. They accounted for about a third of the bookbinding; 30 percent of the Nation's small volume of greeting-card production; 28 percent of the independent lithographic work; about 22 percent of the book printing; 20 percent of the general job printing; 17 percent of the newspaper printing and publishing; and 15 percent of the periodical printing. In terms of their importance in New York State, however, newspaper printing shops are by far the most significant. In 1939, they accounted for over a third of the total output of printed materials in the State. General commercial printing was the next largest activity, with over a fifth of the total value of output.

Newspaper printing and publishing was the largest single source of jobs in the industry as a whole, in 1939, accounting for over 30 percent of the total, as shown in the following table. Workers in job and greeting-card printing combined amounted to 25,600. The percentage of all printing workers in the country employed in New York shops in the different branches of the industry is shown in the third column and in each case is a substantial part of the total.



Type of establishment	Total employment, 1939	Percent of State's printing employment	New York's employment as percent of national total
All establishments	100,035	100.0	19
Printing and publishing [1]	43,007	43.0	16
Newspapers	30,614	30.6	15
Periodicals	6,459	6.5	19
Books	5,934	5.9	20
Job printing	23,171	23.2	18
Greeting cards	2,423	2.4	24
Bookbinding	10,834	10.8	34
Service shops	10,001	10.0	29
Photoengraving	3,828	3.8	28
Typesetting	2,480	2.5	31
Engraving	1,994	2.0	29
Electrotyping and stereotyping	1,699	1.7	27
Lithography	9,173	9.2	26
Gravure	677	0.7	22
Output under $5,000	749	0.7	8

[1] Excludes publishing without printing.

Outlook. The increase in printing activity in New York State since before the war has been about the same as in the country as a whole. Between 1939 and 1947, total employment in printing and publishing, including workers in publishing plants which do no printing, showed a gain of 28 percent. A good share of this increase occurred between 1945 and 1946, when the postwar boom in business activity was getting under way. No current figures are available on the employment of printing craftsmen, but substantial increases have certainly occurred in all of the various occupations.

In the next several years, there may be further moderate gains in printing activity in New York, depending on general business conditions. More than likely, however, most of the coming job openings will result from replacement needs—to fill vacancies arising from deaths, retirements, and other normal turn-over factors. Many of the workers are in the older age groups where such drop-outs are more numerous.

In April 1948, there were 33 registered area programs for apprenticeship training in the State covering the different printing trades, and the number of individuals registered as apprentices was approximately 4,000. By the end of the year, the latter figure was 4,150. With these and several thousand additional nonregistered trainees, a large share of the replacement needs (notably in skilled occupations) are already taken care of for a year or two at least. Training opportunities are therefore almost certain to be limited in number during this period.

New York is by far the leading publishing center in the country. It is the headquarters of the advertising industry. Unusually large numbers of industrial and commercial firms whose activities require substantial quantities of printing are located there. Considering the nature of the demands for printing made upon the industry in the State, New York is certain to retain its dominant position in the field. Over the long run it should continue to provide a large and growing number of printing jobs.

Earnings. New York union wage scales for printing workers are among the highest in the country in all trades. The New York City average of $2.47 in the newspaper industry exceeded that in any city of the country in either of the branches of the industry surveyed.[1] Taking the State as a whole, rates in effect on January 2, 1948, ranged from 78 cents (for book and job bindery women in Binghamton) to $2.83 (for book-job gravure photoengravers in New York City), one of the highest scales in the country in any printing occupation.

Well over half the scales in New York fell within a range of $1.73 (a rate common in Binghamton) to $2.50 (for New York City book and job electrotypers). Complete available data follow:

[1] The corresponding book and job average was $2, second to Chicago. Many foreign-text compositors, however, in book and job (as well as newspaper) work earned substantially higher than English-text typesetters.

Occupation	Binghamton	Buffalo	New York	Rochester
Newspaper shops:				
Hand compositors and machine operators	$1.73	$2.19	$1.81–2.48	$1.63–1.97
Stereotypers	1.73	2.09	2.25	1.97
Photoengravers		2.45	2.59	2.24
Journeymen pressmen	1.73	1.96–2.10	[1]2.11–2.46	1.97
Pressmen-in-charge		2.13–2.30	2.54	2.11
Book and job shops:				
Hand compositors and machine operators		2.04	2.23	1.75–1.97
Electrotypers		1.55	2.50	
Photoengravers		2.16	2.74–2.83	2.00
Cylinder pressmen	1.50–1.73	1.96–2.18	2.23–2.53	1.60–2.18
Platen pressmen	1.50–1.63	1.82	1.95–2.10	1.44–1.97
Press assistants and feeders	1.10–1.18	1.42–1.78	1.38–1.92	1.12–1.59
Bookbinders	1.02–1.45	1.83	1.33–2.24	1.70–1.92
Bindery women	.78–.88	.93	.90–1.08	.93–1.06

[1] Average: $2.33.

New Jersey and Pennsylvania

Summary. Gradual long-run upward trend of employment in Pennsylvania, with little if any increase in New Jersey.

Background. Pennsylvania is the third most important printing State in the country, employing about 17,000 craftsmen (excluding bookbinders) in 1940. Thirteen thousand of the State's printing journeymen were typesetters and compositors, while about 2,300 were in pressroom occupations. Pennsylvania is a leading State in the publishing and printing of periodicals, accounting for 21 percent of the Nation's total output in 1939.

Within the State, newspaper printing is the largest single activity, with almost 40 percent of the total output—followed by periodical printing and publishing with 22 percent and general commercial job printing with 19 percent. No other type of activity accounts for a significant share of Pennsylvania's printing output.

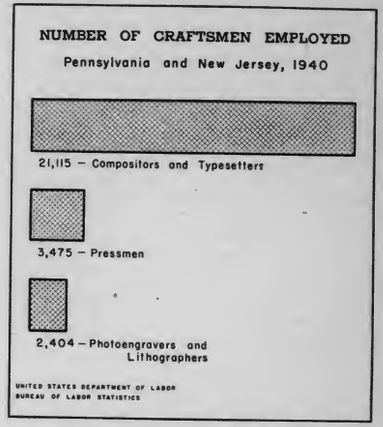
About 17,000 were employed in newspaper publishing and printing and 5,700 in periodical publishing and printing in 1939. General commercial printing accounted for over 10,000 workers and lithographing for over 2,000. The following table shows the employment in each category in 1939 for Pennsylvania and New Jersey combined:

Type of establishment	Employment 1939	Percent
All establishments	61,071	100.0
Printing and publishing [1]	33,416	54.7
Newspapers	22,862	37.4
Periodicals	5,903	9.7
Books	4,651	7.6
Job printing	14,941	24.5
Greeting cards	706	1.2
Bookbinding	3,804	6.2
Service shops	4,534	7.4
Photoengraving	1,142	1.9
Typesetting	965	1.6
Engraving	1,816	2.9
Electrotyping and stereotyping	611	1.0
Lithography	3,020	4.9
Gravure		
Shops with output under $5,000	650	1.1

[1] Excludes publishing without printing.

Philadelphia is by far the leading printing center in Pennsylvania. The only other location of any consequence is Pittsburgh.

Although New Jersey is the seventh largest State in employment of printing craftsmen, its more than 10,000 journeymen constituted a far smaller group than is found in the top-ranking States. Printing employment in the State is well distributed among its leading cities, with Jersey City and Newark having the greatest number.



Newspaper publishing and printing is the largest printing activity in New Jersey. It accounted for 35 percent of the State's ouput in 1939, closely followed by general commercial printing, with 30 percent of the total. In no type of printing is New Jersey a major factor. In book printing, it is one of the larger States but ranks far behind New York and Illinois.

Printing employment in New Jersey is concentrated in the above-mentioned types of activities. In 1939, about 5,500 workers were employed in newspaper publishing and printing plants and 4,500 in general commercial printing. Bookbinding was the third major source of jobs, with over 2,000 employees.

Outlook. There is some possibility of continued small increases in printing employment in Pennsylvania during the next year or two. The long-run trend is almost certainly upward. Pennsylvania's important position in the periodical

publishing field should assure continuation of a high level of printing employment in the State. Between 1939 and 1947, employment in the printing industries as a whole in Pennsylvania increased by about a fifth. Most of this increase occurred during 1946 and 1947. The largest source of job opportunities, however, will be in connection with replacement of workers who will die or retire in the next several years. However, a considerable number of apprentices (600 or 700 or more) are now in training and will take up a good share of the journeymen vacancies in particular.

The outlook for New Jersey is for generally stable employment with no significant increases likely. Employment has increased in recent years much less in New Jersey than in most other States; the total rise since 1939 was 12 percent. In this State, more than in most others, replacement openings will be the principal factor in job openings. Because of the limited opportunities and the great interest in printing work, there should be much competition for the available openings.

Earnings. In January 1948, of the cities for which union wage scales were available, rates were generally highest in Newark, N. J., and lowest in York, Pa. Rates ranged from a low of 85 cents (for bindery women in Philadelphia and York, Pa.) to a high of $2.71 (for book and job photoengravers in Newark). Complete available data on union wage scales in effect in January 2, 1948 are shown in the following tabulation:

Occupation	New Jersey, Newark	Pennsylvania					
		Erie	Philadelphia	Pittsburgh	Reading	Scranton	York
Newspaper shops:							
Hand compositors and machine operators	$2.20	$1.97	$2.13	$2.40	$1.79	$2.05	$1.78
Stereotypers	2.03	1.63	1.65	1.99	1.79	1.98	1.78
Photoengravers	2.19	------	2.37	2.31	----------	----------	------
Journeymen pressmen	2.10	1.81	[1] 1.99–2.13	1.89	1.79	1.94–1.96	------
Pressmen-in-charge	2.29	------	2.20–2.28	1.96	1.92	2.06	------
Book and job shops:							
Hand compositors and machine operators	----------	1.80	1.84	2.24	1.73	1.92	1.70
Electrotypers	2.50	------	2.35	1.70	----------	1.95	1.59
Photoengravers	2.71	------	2.02	2.13	----------	----------	------
Cylinder pressmen	1.80–2.35	1.75	1.75–2.29	1.92–2.35	1.69	1.88–1.99	------
Platen pressmen	2.00–2.23	1.60	1.86	1.83	1.58–1.63	1.60	------
Press assistants and feeders	1.20–1.96	------	1.28–1.76	1.13–1.70	1.47–1.63	1.25–1.60	------
Bookbinders	1.72–2.10	------	1.56–1.74	1.65	----------	1.64–1.69	1.45
Bindery women	1.10	------	.85–.90	.89	----------	.96	.85

[1] Average $2.00.

SOUTH ATLANTIC I REGION

(Delaware, District of Columbia, Maryland, Virginia, West Virginia)

Summary. Stable employment with small increases possible over long run.

Background. This region is unique for its large proportion of printing craftsmen on the public pay roll, in the District of Columbia. In 1940, there were resident in the region about 12,000 employed journeymen (excluding bookbinders) approximately as follows: Maryland, 4,700; District of Columbia, 3,200; Virginia, 2,400; West Virginia, 1,000; and Delaware, 300.

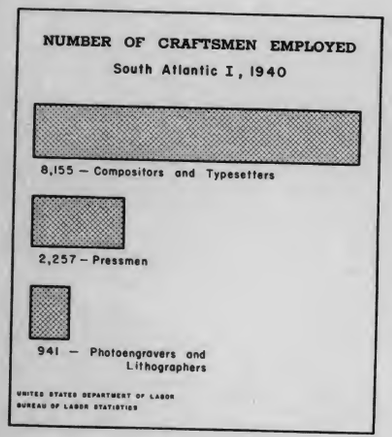
The largest single location of actual employment, however, was probably Washington (rather than Maryland), because workers are shown by their place of residence rather than place of employment, and many printers commute to Washington from Maryland and Virginia.

Most of the skilled workers in each of these areas were compositors or typesetters. The Nation's Capital had a greater than usual percentage of workers in pressroom occupations. The table which follows shows the approximate Federal employment in selected trades, in 1939:

Compositors and typesetters	1,200
Electrotypers and stereotypers	70
Photoengravers and lithographers	50
Printing pressmen and plate printers	1,000

Newspapers and periodicals, including more or less comparable Government items, constitute the largest category of printed matter turned out in the region. However, job printing accounts for a large proportion of such production throughout this area. In Maryland, for example, this type of work added up to 30 percent of the total. In the District of Columbia, probably most of the Government Printing Office's work is of this general character. Lithography and bookbinding are also important in these two places. The number of bound books completed by the Government Printing Office corresponds to the output of some of the large book publishing firms in New York.

Baltimore accounts for a large share of Maryland's printing business output; Richmond and Norfolk are the leading centers in Virginia. West Virginia's activity is distributed among a number of centers, including Wheeling and Charleston. In the region as a whole, employment in privately owned establishments in 1939 for each type of printing was as follows:



Type of establishment	Employment 1939	Percent
All establishments	21,357	100.0
Printing and publishing [1]	12,134	56.9
Newspapers	10,418	48.8
Periodicals	1,000	4.7
Books	716	3.4
Job printing	5,802	27.2
Bookbinding	951	4.5
Service shops	730	3.4
Photoengraving	310	1.4
Typesetting	204	1.0
Engraving	108	.5
Electrotyping and stereotyping	108	.5
Lithography	1,457	6.8
Shops with output under $5,000	283	1.3

[1] Excludes publishing without printing.

Outlook. Private employment in these States has increased only slightly since before the war. However, there has been a substantial gain in Federal employment and a part of the business of the private firms has always been attributable to Government orders. The trend in Federal printing employment in particular has been downward in the last year or two, however, and moderate expansion at best is expected in private or public printing employment during the next few years or over the long run.

There will, nevertheless, be a number of job openings arising from turn-over, including vacancies attributable to deaths and retirements. But in the future, as normally in the past, fairly strong competition is likely for the apprenticeship and other job opportunities in the region. For Government jobs, civil service registers are usually adequate to keep the various employing agencies (offset, if not letterpress, workers seem to be found throughout the Government) supplied with personnel. Currently, there appears to be a shortage at least in Government (principally Government Printing Office) of linotype and monotype keyboard operators. This situation may well persist indefinitely.

Earnings. The Nation's Capital is the region's first city also in union wage scales (covering workers on private pay rolls only). Rates in

effect on January 2, 1948, in the District of Columbia ranged from 90 cents an hour for bindery women to $2.43 for newspaper compositors. About half the scales were upwards of $2.

Government salary rates, on which more recent data are available, are generally kept in line with those in the private printing plants, more particularly, with the union wages scales in the region. In early 1949, the range of rates, on a basis more or less comparable to that applied in connection with private scales, was $1.18 (for "bindery operator") to $3.04 (for plate printers). The lowest craftsman rate was $2.20 (for platen pressmen).

Outside of Washington, scales ranged from as low as 63 cents an hour, for some bindery women in Baltimore, Md., to as high as $2.29 for some book and job photoengravers in the same city. About half the scales in Baltimore and the two Virginia cities covered (Richmond and Norfolk) were $1.80 and up.

Complete available data for private plants in the selected cities of the region as of January 2, 1948, are shown in the following tabulation:

Occupation	Washington, D. C. (non-Government)	Maryland, Baltimore	Virginia		West Virginia, Charleston
			Norfolk	Richmond	
Newspaper shops:					
Hand compositors and machine operators	$2.43	$2.26		$1.94	
Stereotypers	2.10	1.81	$1.88	1.63	$1.75
Photoengravers	2.30	2.16	1.96	1.63	
Journeymen pressmen	1.90	1.81	1.89	1.88	1.80
Pressmen-in-charge	2.03	2.00–2.06		2.13	2.03
Book and job shops:					
Hand compositors and machine operators	2.11	1.75	1.75–1.94		1.98
Electrotypers	2.26	1.75		1.88	
Photoengravers	2.21	2.08–2.29		1.88	
Cylinder pressmen	1.83–2.36	1.60–1.98		1.25–1.88	1.98
Platen pressmen	1.61–1.74	1.49		1.15	
Press assistants and feeders	1.23–1.73	1.14–1.46		1.00–1.54	
Bookbinders	1.75	1.55	2.03	1.43–1.64	1.98
Bindery women	.90	.63–.85		.65–.85	1.13

SOUTH ATLANTIC II REGION

(Florida, Georgia, North Carolina, South Carolina

Summary. Steady growth in employment is likely, especially in Florida, but there will be strong competition for job openings.

Background and Outlook. Less than 7,000 printing craftsmen (excluding bookbinders) were employed in this region in 1940. Only Georgia had more than 2,000; South Carolina had less than a thousand. The great bulk of the jobs were held by compositors and typesetters. There was also a fair proportion of pressmen, but very small numbers were employed in photoengraving, lithography, and electrotyping work.

Newspaper printing and general commercial printing accounted for almost the entire output of each of these States in 1939. Georgia contributed a small amount of lithographic work and some book printing. The region's employment in the various types of printing establishments in 1939 is shown in the table on the facing page.

These States, together, have shown a very rapid rise in printing employment since before the war. Between 1939 and 1947, employment increased more than two-fifths. The largest gains were recorded in Florida and Georgia. But advances, of more than 25 percent were registered also in the

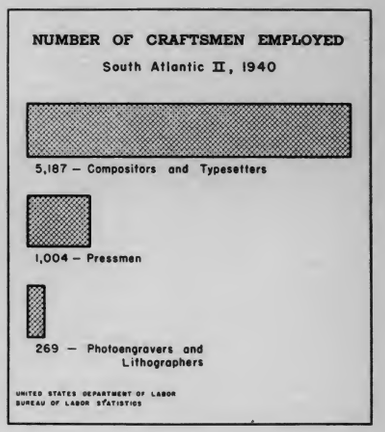
Type of establishment	Employment 1939	Percent
All establishments	14,419	100.0
Printing and publishing [1]	9,676	67.1
Newspaper	9,188	63.7
Periodicals	220	1.5
Books	268	1.9
Job printing	3,282	22.8
Bookbinding	209	1.4
Service shops	356	2.5
Photoengraving	288	2.0
Typesetting	68	.5
Lithography	322	2.2
Shops with output under $5,000	574	4.0

[1] Excludes publishing without printing.

Carolinas. These gains can be attributed in part at least to the rapid rise in industrialization in these States, which has raised their income levels. Present indications are that there will be slight increases in employment during the next several years and more or less steady growth thereafter, principally in Florida. Competition for new jobs may be fairly strong, however, especially in Florida, to which many workers from other States migrate. A total of about 400 young people are believed to be in training in the region for status as printing journeymen (in early 1949).

Earnings. Atlanta, Ga., appears to be the leading city in the region, as far as union wage scales are concerned. In effect in Atlanta on January 2, 1948, was a range of rates of $1.03 to $2.35 for book and job bindery women and photoengravers, respectively. Elsewhere in the region rates fell to as low as 70 cents (bindery women in Jacksonville, Fla.); none reached the top Atlanta rate indicated above. Over half the scales in these States were between $1.60 and $2.10.

Complete available data for the selected cities in this region are shown in the tabulation below:



Occupation	Florida		Georgia, Atlanta	North Carolina, Charlotte
	Jacksonville	Tampa		
Newspaper shops:				
Hand compositors and machine operators	$2.29	$1.95		$1.85
Stereotypers	2.29	1.95	$2.19	1.88
Photoengravers	2.00	1.65	2.08	
Journeymen pressmen	2.00	1.95	2.19	1.85
Pressmen-in-charge	2.13	2.18	2.34	
Book and job shops:				
Hand compositors and machine operators	1.50	1.75		1.85
Electrotypers			2.17	
Photoengravers	1.95		2.35	
Cylinder pressmen			1.58–2.16	1.80
Platen pressmen		1.65	2.00	1.55
Press assistants and feeders			1.13–1.35	
Bookbinders	1.25		1.99	1.45
Bindery women	.70		1.03	.87

GREAT LAKES REGION

(Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin)

Summary. Moderate increase in employment over long run. Strong competition for available job openings.

Background. These Great Lakes States have a major place in the Nation's printing industry. In 1940, they had a total of over 38,000 printing craftsmen (excluding bookbinders). About 27,000 of these workers were compositors or typesetters, while only 5,500 were in pressroom occupations. Over 4,500 were in photoengraving or lithographic work, and another 1,500 or so were electrotypers or stereotypers. Ohio is by far the largest printing State among this group, with almost 15,000 printing craftsmen before the war. Michigan had over 8,000, and Wisconsin and Indiana had about 5,000 each. Minnesota was slightly behind with 4,700.

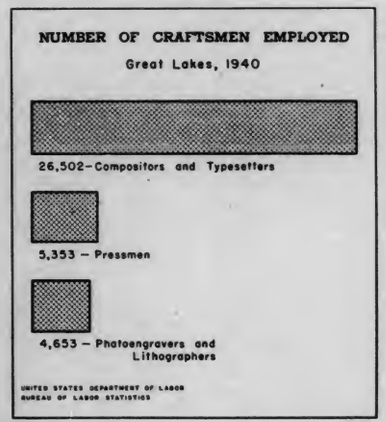
In all of these States, newspaper printing is the largest single activity. Taking the region as a whole, general commercial printing ranks second, with 23 percent of the total output in 1939, and periodical publishing is third with 16 percent.

Ohio differs greatly from the other States in the area, however. In this State, periodical publishing ranks above job printing in importance, its dollar value of output was almost equal to the total 1939 production of newspaper plants in 1939. In fact, Ohio is the Nation's leading State in the periodical publishing field, with about 28 percent of the total value of output in 1939. In the rest of the States in the region, general commercial printing is second in importance to newspapers. In Wisconsin, book printing and lithographic work made up somewhat larger percentages of total activity in 1939 than elsewhere in the region. Except for Ohio's predominance in the periodical publishing field, no State in this area is a major factor in any type of publishing activity.

Employment in the area follows the same pattern as the output. The number of workers in the various types of printing establishments in 1939 is shown in the following table:

Type of establishment	Total employment, 1939	Percent
All establishments	92,906	100.0
Printing and publishing [1]	50,051	53.9
Newspapers	35,446	38.2
Periodicals	8,593	9.2
Books	6,012	6.5
Job printing	22,432	24.1
Greeting cards	1,325	1.4
Bookbinding	5,093	5.5
Service shops	5,971	6.4
Photoengraving	2,539	2.7
Typesetting	1,388	1.5
Engraving	488	.5
Electrotyping and stereotyping	1,556	1.7
Lithography	6,547	7.0
Gravure	-------	-------
Shops with output under $5,000	1,487	1.6

[1] Excludes publishing without printing.



Ohio contains a number of important printing centers; the largest include Cleveland, Cincinnati, Dayton, and Columbus. Detroit acounts for about 40 percent of the activity in Michigan, and Grand Rapids is the only other large printing center in the State. Indianapolis is the principal center in Indiana. Other than Hammond no other cities in this State have any importance in the printing field. Milwaukee is the only large printing center in Wisconsin, although Madison has a considerable number of printing jobs. The twin cities of Minneapolis and St. Paul account for a large proportion of the printing employees in the State of Minnesota.

Outlook. Printing employment in these States in recent years has closely followed the national trend. Printing and publishing jobs increased about 25 percent between 1939 and 1947. The growth, amounting to less than 15 percent, was considerably smaller in Michigan than in the other States. Minnesota showed by far the largest percentage gain, increasing its total employment in printing and publishing by almost half.

The long-run outlook in printing for this area seems generally favorable. If over-all business activity in these States continues at high levels, the demand for printing work should hold up. Most of the printing output in these States is local in nature. Magazine publishing in Ohio is a notable exception. In addition to the new job openings, there will also be some openings resulting from deaths and retirements of older workers during the next 5 or 10 years.

However, many young people—well in excess of 3,000 in the region—are already in training for printing jobs. There are about 130 registered continuing area apprenticeship programs. Competition for the available jobs, especially that among newcomers for trainee opportunities, will probably be strong.

Earnings. Union wage scales in selected large cities in these States on January 2, 1948, tended to be highest in Detroit, where they ranged from 92 cents an hour for bindery women to $2.66 for some newspaper "pressmen-in-charge," the top rate for any printing job in the region. Relatively low rates were found principally in Duluth, Minn. (80 cents for book and job press assistants to $1.88 for newspaper photoengravers). The lowest scale, however, was 77 cents (for some book and job press assistants in Minneapolis). This is one of the lowest rates reported for these or any other occupations anywhere in the country.

Complete available data follow:

Occupation	Indiana		Michigan		Minnesota		
	Indianapolis	South Bend	Detroit	Grand Rapids	Duluth	Minneapolis	St. Paul
Newspaper shops:							
Hand compositors	$2.11	$1.96	$1.50–2.55	$2.05	$1.85	$2.35	$2.30
Machine operators	2.11	1.96	1.50–2.55	2.05	1.85	2.35	2.30
Stereotypers	2.09	1.98	2.46	2.05	1.63	2.20	1.92
Photoengravers	2.44	------	2.41	2.00	1.88	2.35	2.30
Journeymen pressmen	2.04	------	2.13–2.39	1.88	1.66	2.20	1.92
Pressmen-in-charge	2.20	------	2.40–2.66	----------	1.80	2.37	2.45
Book and job shops:							
Hand compositors	2.00	1.95	2.30	2.05–2.10	1.45	1.87	1.87
Machine operators	2.00	1.95	2.30	2.05–2.10	------	1.87–2.21	1.87
Electrotypers	2.00	2.00	2.26	1.70	------	2.05	2.05
Photoengravers	2.21	2.00	2.13–2.53	----------	------	1.71	1.71–2.13
Cylinder pressmen	1.65–2.07	------	2.08–2.15	1.85	1.40	1.30–2.07	1.87–2.30
Platen pressmen	1.83–1.97	------	1.85	1.60	1.10	1.37	1.32–1.95
Press assistants and feeders	1.17–1.84	------	1.35–1.83	1.15–1.45	.80	.77–1.52	1.07–1.52
Bookbinders	1.97	1.90	1.25–1.80	----------	------	1.74	1.70–1.74
Bindery women	1.09	1.02	.92–1.07	----------	------	.90	.90–1.06

Occupation	Ohio						Wisconsin	
	Cincinnati	Cleveland	Columbus	Dayton	Toledo	Youngstown	Madison	Milwaukee
Newspaper shops:								
Hand compositors		$2.40	$2.28	$2.20	$2.28	$2.13	$2.00	$2.06
Machine operators		2.40	2.28	2.20	2.28	2.13	2.00	2.05
Stereotypers	$2.11		2.01	2.13	2.21	2.04	2.00	1.97
Photoengravers	2.37	2.40–2.47	2.64	2.09	2.32			2.24
Journeymen pressmen	2.04	[1] 2.26–2.64	2.00	2.11	2.38–2.57	1.78	2.00	1.91–2.00
Pressmen-in-charge	2.17	[2] 2.46–2.64	2.13		2.33–2.55	1.91	2.08	2.07
Book and job shops:								
Hand compositors		2.15	2.08	2.14	1.95–2.07		1.81	2.06
Machine operators		2.20	2.08	2.14	1.95–2.07		1.81	2.06
Electrotypers	1.92	2.05	1.84	2.25	1.75			2.00
Photoengravers		2.40–2.48		2.20	2.00	2.13	2.34	2.34
Cylinder pressmen	1.54–2.21	1.86–2.25	2.08	1.66–2.43	1.95	1.90–1.91		1.90–2.10
Platen pressmen	1.54–1.64		2.08	1.83–2.06	1.83–1.88	1.84		1.88
Press assistants and feeders	1.03–1.72	1.41–1.79	1.72	1.63–1.70	1.68	.85–1.25		1.23–1.76
Bookbinders	1.90	2.00	2.08	1.85–1.95	1.80			1.90
Bindery women	1.07	.95–1.02	1.13	.90–1.10	1.15			.95

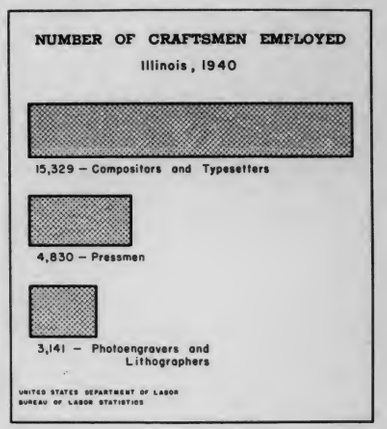
[1] Average $2.29.
[2] Average $2.32.

Illinois

Summary. Not much change in employment during next several years; small increases possible over longer run.

Background. Illinois ranks second to New York as the largest employer of printing workers in the country. In 1940, over 24,000 printing craftsmen (excluding bookbinders) were employed in the State, making up 11 percent of the national total. Over 15,000 of these were compositors and typesetters, while almost 5,000 were printing pressmen and plate printers. About 3,100 were employed as photoengravers and lithographers. Two-thirds of the workers in Illinois were in Chicago; many of the remainder were in areas surrounding the city.

Illinois is the leading center of rotogravure work, accounting for almost half of the national output in 1939. In the much more important field of job printing it ranks with New York as the top State. Much of the commercial printing work in Illinois consists of periodicals printed for magazine publishers. Illinois is also an important center for almost every other type of printing, accounting for over 15 percent of the book printing in the country, for almost 19 percent of the lithographic work, and 13 percent of the bookbinding. General commercial printing shops had the largest volume of output in the State, almost a third of the total; newspaper printing ranked second. The following table shows the employment in the major categories of printing in 1939. The largest number, 22,000, were engaged in general commercial printing, and over 15,000 were in newspaper printing.



Type of establishment	Employment 1939	Percent
All establishments	65,483	100.0
Printing and publishing [1]	24,514	37.4
Newspapers	15,228	23.3
Periodicals	4,212	6.4
Books	5,074	7.7
Job printing	21,999	33.6
Greeting cards	1,107	1.7
Bookbinding	3,733	5.7
Service shops	5,670	8.7
Photoengraving	2,471	3.8
Typesetting	1,222	1.9
Engraving	864	1.3
Electrotyping and stereotyping	1,113	1.7
Lithography	6,543	10.0
Gravure	1,395	2.1
Shops with output under $5,000	522	.8

[1] Excluding publishing without printing.

Outlook. Printing employment in Illinois is expected to remain relatively stable over the next several years with some possibility of small increases in employment over the longer run. Between 1939 and 1947, employment in printing and publishing firms in Illinois increased by about one-quarter, a gain which was in line with the national average. Although no substantial rise in employment is anticipated during the next several years, there will be some openings to replace older workers who die or retire.

A large share of the volume of printing in Illinois is in magazines, and there is no indication that this demand will fall off or be shifted away from Illinois. A large part of the remainder consists of job printing, and the future of this type of output depends on the general level of business in the State. Illinois and its great city, Chicago, is expected to continue to be as important an industrial and commercial center in the future as in the past. For this reason the State is likely to remain indefinitely the second ranking printing area in the country. Competition for available openings is likely to continue to be keen, however. Printing trainees in the State now number in the hundreds, and there are always large numbers of applicants for such positions.

Earnings. Pay of Illinois printing workers, principally those in Chicago, ranks among the top for the country. Union wage scales in effect January 2, 1948, in three major centers, ranged from $1.27 (for bindery women in Chicago) to $2.80 (top book and job cylinder pressman rate in Chicago), one of the highest scales in any printing trade anywhere in the country.

Complete available data follow:

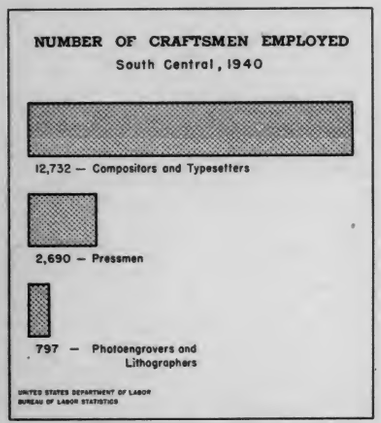
Occupation	Chicago	Peoria	Rock Island and Moline
Newspaper shops:			
Hand compositors and machine operators		$2.00	$1.96
Stereotypers	$2.04–2.37	1.92	1.96
Photoengravers	2.51	2.20	1.87
Journeymen pressmen	2.01–2.08	2.00	1.96
Pressmen-in-charge	2.19–2.32	2.13	2.12
Book and job shops:			
Hand compositors and machine operators		1.90	1.75
Electrotypers	2.50	1.85	1.76
Photoengravers	2.39–2.51		
Cylinder pressmen	2.02–2.80	1.85	1.66
Platen pressmen	2.16–2.35	1.75	1.43
Press assistants and feeders	1.68–2.44	1.45–1.65	1.32
Bookbinders	2.12–2.44		
Bindery women	1.27–1.31		

SOUTH CENTRAL REGION

(Alabama, Arkansas, Kentucky, Louisiana, Mississippi, Oklahoma, Tennessee, Texas)

Summary. Gradual rise in employment, with job chances better than in most other sections of the country.

Background. The only State in this region with any significant amount of printing employment is Texas. Its printing craftsmen at work in 1940 numbered about 6,000. Kentucky and Tennessee both had over 2,500; Oklahoma had slightly less than 2,000; Alabama about 1,200; and Arkansas and Mississippi considerably less than a thousand each. The printing shops in these States make relatively heavy use of hand composition work, and three-quarters of the area's craftsmen were compositors and typesetters. Sixteen percent were pressroom workers, and only very small numbers were employed in photoengraving, lithography, electrotyping, and stereotyping.



Newspaper publishing is the largest single printing activity in the region. In every State, it accounts for more than half the total output. The next most important category of output is job printing. In Tennessee and Oklahoma, about 10 percent of the output in 1939 consisted of periodicals. Lithography accounted for close to 10 percent of the output in Kentucky. The number of workers in each of the major classes of printing shops in 1939 is shown in the following table:

Type of establishment	Employment 1939	Percent
All establishments	35,628	100.0
Printing and publishing [1]	22,974	64.5
Newspapers	20,522	57.6
Periodicals	1,808	5.1
Books	644	1.8
Job printing	7,866	22.1
Bookbinding	1,106	3.1
Service shops	1,155	3.2
Photoengraving	578	1.6
Typesetting	218	.6
Engraving	257	.7
Electrotyping and sterotyping	102	.3
Lithography	1,048	2.9
Gravure	----	----
Shops with output under $5,000	1,479	4.2

[1] Excludes publishing without printing.

Outlook. In general, this region has shown a substantial gain in employment since 1939. The State with the largest percentage increase is Texas, where the number of printing jobs has jumped by more than 50 percent. With the exception of Kentucky and Oklahoma, no State had a gain of less than a fourth.

The sharp rises in employment which have occurred in this area reflect in part the advances made in industrialization and the rapidly growing population in some of the States. Most printed materials in these areas are produced for local consumption. Future prospects are for very gradual increases in employment. Job chances, however, may be relatively better in this than in most other sections of the country. There are believed to be in the neighborhood of 1,000 apprentices currently in training in the area. Programs registered with the Bureau of Apprenticeship, United States Department of Labor, numbered about 70 in early 1949.

Earnings. In union wage scales as in other respects, Texas is the leading printing State in this part of the country. Few of the top rates for the various trades in the region are found outside Texas. Of the forty-some odd scales cited for Texas, only five were below $1.35.

The top scale in the region was $2.33 for newspaper "pressmen-in-charge" in Dallas, Tex.; the low, 60 cents, for some press assistants in Little Rock, Ark.

Complete available data for the selected cities in this region as of January 2, 1948, are shown in the following tabulation:

Occupation	Alabama		Arkansas, Little Rock	Kentucky, Louisville	Louisiana, New Orleans	Oklahoma, Oklahoma City
	Birmingham	Mobile				
Newspaper shops:						
Hand compositors and machine operators	$1.90	$1.80	$1.73	----	$1.90	$1.83
Stereotypers	1.83	1.90	1.64	$2.08	1.65	1.65
Photoengravers	1.95	----	----	2.21	1.95	2.13
Journeymen pressmen	1.80	1.90	1.64	1.97	1.70	1.76–1.83
Pressmen-in-charge	1.89	----	1.74	2.24	1.85	1.89
Book and job shops:						
Hand compositors	2.00	1.90	1.56	----	1.80	1.65
Machine operators	2.00	1.90	1.56	----	1.80	1.65
Electrotypers	2.01	----	----	----	2.03	1.66
Photoengravers	1.95	----	----	2.00–2.10	1.90	2.00
Cylinder pressmen	1.80–2.15	1.70	1.19	1.37–2.16	1.65–1.73	1.65
Platen pressmen	1.52	1.70	1.19	1.35–1.46	1.20	1.51
Press assistants and feeders	.90–1.45	----	.60–.83	.98–1.62	.80–1.28	1.04–1.17
Bookbinders	1.80	----	1.56	----	1.65	1.60
Bindery women	1.00	----	.80	----	.85	.90

Occupation	Tennessee		Texas			
	Memphis	Nashville	Dallas	El Paso	Houston	San Antonio
Newspaper shops:						
Hand compositors and machine operators	$2.13	$2.05	$2.24	$2.00	$2.27	$2.03
Stereotypers	1.77	2.04	2.16	1.84	1.96	1.83
Photoengravers	2.19	2.29	----	----	2.30	1.75
Journeymen pressmen	1.78	2.04	2.12	1.84	1.89	1.86
Pressmen-in-charge	2.00	2.21	2.33	1.87	1.95	2.11
Book and job shops:						
Hand compositors	1.63	1.80	2.25	----	2.27	1.90
Machine operators	1.63	1.93	2.25	----	2.27	1.90
Electrotypers	1.88	1.75	----	----	2.10	----
Photoengravers	----	2.06	2.00	----	----	1.75
Cylinder pressmen	1.58–1.68	1.41–1.80	1.07–1.88	1.84	1.95–2.08	1.50–1.84
Platen pressmen	1.35–1.60	1.38–1.53	1.66	1.84	1.70–1.85	1.35
Press assistants and feeders	.81–1.05	.91–1.30	1.07–1.45	----	1.65–1.71	.75–1.00
Bookbinders	1.53	1.28–1.65	----	----	----	1.50
Bindery women	.81	.85	----	----	----	.75

WEST NORTH CENTRAL REGION

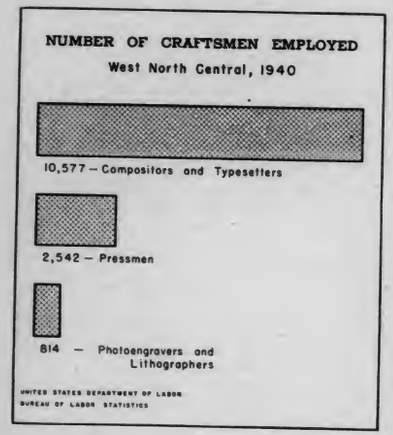
(Iowa, Kansas, Missouri, Nebraska, North Dakota, South Dakota)

Summary. Very small increases in employment during the next few years and over the longer run.

Background. This region is among the less important printing centers. In 1940, about 14,000 printing craftsmen were employed there, accounting for about 7 percent of the Nation's journeymen (excluding bookbinders). Nearly 3 out of 4 of these workers were compositors and typesetters. Most of the rest were pressroom workers. Photoengravers, lithographers, and electrotypers were of the least importance numerically.

Missouri is by far the most important State in the region, accounting for more than 40 percent of the employment in 1940. Iowa has a fair number of workers—about 3,000—and Kansas has close to 2,500. Nebraska, North Dakota, and South Dakota have very few printing jobs. With local commercial and industrial demands for printing relatively slight in the area as a whole, newspaper printing is by far the most important activity. In 1939, printing done by newspapers made up 53 percent of the total value of output in the region; the percentage in each State ranging from 45 percent in Missouri to 85 percent in North Dakota. In Missouri, the printing needs of the many industries found in the State help to make the output of "job" shops about 30 percent of the total. Missouri also has some lithography shops, which contribute close to 10 percent to the total output in the State. Iowa had a fairly large volume of periodical publishing, such shops accounting for 20 percent of the printing output in that State. Several magazines directed to rural readers are published in Iowa.

The following table shows the employment in the various types of printing activity in 1939. It can be seen that newspaper printing in the region, in line with its high share of the output, also has the biggest proportion of the employment.



Type of establishment	Employment 1939	Percent
All establishments	33,000	100.0
Printing and publishing [1]	20,000	60.5
Newspapers	17,000	51.5
Periodicals	2,500	7.5
Books	500	1.5
Job printing	7,700	23.5
Lithography	1,500	4.5
Service industries	1,150	3.5
Photoengraving	500	1.5
Typesetting	300	.9
Eletrotyping and stereotyping	200	.6
Shops with output under $5,000	1,750	5.3
Bookbinding	9,000	2.7
Engraving	150	.5

[1] Excluding publishing without printing.

Outlook. The trend of employment in this region during recent years has been about the same as the national trend. Between 1939 and 1947, the region's total employment in the printing and publishing industry increased about 25 percent. Missouri's percentage increase was about 23 percent. Kansas and Iowa showed the largest relative gains in employment; the former, nearly a 50-percent increase; Iowa, a 30-percent rise. North Dakota also had a substantial percentage increase in employment of over one-third, but, printing jobs in the State are very few. Nebraska's employment showed practically no change over the period.

Only very moderate increases in employment can be expected in this region both during the next several years and over the longer run. With population in the area fairly stable, newspaper printing, the major activity, is not likely to expand very much. Missouri's large volume of commercial printing should at least be maintained in the period immediately ahead and continue to grow over the long run.

Earnings. In January 1948, the highest union wage scales found in the large cities covered in this region were in St. Louis and Kansas City, Mo. Wichita, Kans., had in general the lowest wages. However, the lowest single rate in the region was 90 cents an hour for bindery women in Des Moines, Iowa. Newspaper photoengravers in St. Louis had the top rate in the area at $2.59.

Complete available data follow:

Occupation	Iowa		Kansas, Wichita	Missouri		Nebraska Omaha
	Davenport	Des Moines		Kansas City	St. Louis	
Newspaper shops:						
Hand compositors and machine operators	$1.96	$1.92	$1.88	$2.13	$2.47	$1.95
Stereotypers	1.96	1.91	1.55	1.70	2.09	1.95
Photoengravers	1.87	2.20	1.88	2.40	2.59	1.88
Journeymen pressmen	1.96	2.11	1.73	1.75–2.18	2.28	1.74
Pressmen-in-charge	2.12		1.79	1.81–2.25	2.47	1.89
Book and job shops:						
Hand compositors and machine operators	1.75	1.90	1.88	2.11	2.12	
Electrotypers	1.76	1.84		2.13	1.96	1.75
Photoengravers		2.20	1.88	1.88	2.16	1.88
Cylinder pressmen	1.66	1.81–1.98	1.82	2.11–2.27	1.80–2.25	1.45
Platen pressmen	1.43	1.70	1.60–1.82	1.96–2.06	1.73–1.87	1.45
Press assistants and feeders	1.32	1.20–1.58	1.26–1.54	1.33–1.67	1.10–1.90	1.20
Bookbinders		1.61	1.78	2.00	1.90	
Bindery women		.90	1.03	1.15	1.10	

ROCKY MOUNTAIN REGION

(Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, Wyoming)

Summary. No significant increase expected in the small number of printing jobs in this region.

Background. The Mountain States, comprising in general the most sparsely settled area in the country, have fewer printing workers than any other region. In 1940, there were only 4,000 printing craftsmen (excluding bookbinders) employed in all these State together, or less than 2 percent of the national total. Colorado, with 1,500 journeymen, had many more than any of the other States in this region. The overwhelming majority of the skilled workers were either compositors and typesetters, or printing pressmen. In this region little in the way of printed matter is produced outside the newspaper industry. Employment in the area in 1939 in the various branches of printing is shown in the following table:

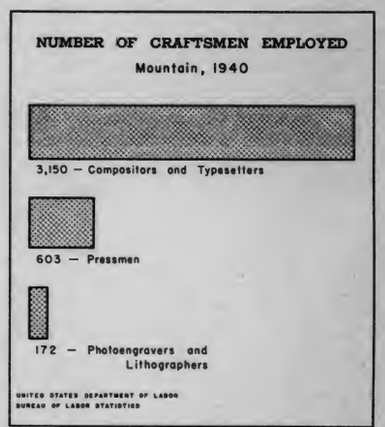
Type of establishment	Employment in 1939	Percent
All establishments	8,648	100.0
Printing and publishing [1]	6,181	71.5
Newspapers	6,009	69.5
Periodicals	172	2.0
Job printing	1,697	19.6
Bookbinding	70	.8
Service shops	137	1.6
Photoengraving	69	.8
Typesetting	30	.3
Engraving	38	.4
Lithography	147	1.7
Shops with output under $5,000	416	4.8

[1] Excludes publishing without printing.

Outlook. The Mountain States as a group have increased their employment of printing workers by more than a fourth since 1939. Such a gain still leaves only a very small number of printing jobs. No significant advances are expected either during the next few years or over the longer run.

Some rise in employment in newspaper printing may occur in one or two States, such as Arizona, whose population has been increasing rapidly. However, the number of job openings in any one year, due to expansion of printing work or to replacement of workers leaving these occupations, is likely to be very small at best.

Apprenticeship opportunities are correspondingly very slight in this region. At the beginning of 1949 the Bureau of Apprenticeship of the Department of Labor reported 25 area training programs, practically all of which were in Arizona and Colorado. These programs probably include less than 300 trainees.



Earnings. Union wage scales in this area tend to be somewhat lower than in many other parts of the country, according to the data for January 2, 1948, for its four principal printing cities—Phoenix, Ariz.; Denver, Colo.; Butte, Mont., and Salt Lake City, Utah. In these cities the lowest rate, 79 cents, was for some book and job press assistants in Butte; the highest, $2.21, was for newspaper compositors and machine operators in Denver. Most scales were between $1.75 and $2.10 an hour. Complete available data are shown in the following tabulation:

Occupation	Arizona, Phoenix	Colorado, Denver	Montana, Butte	Utah, Salt Lake City
Newspaper shops:				
Hand compositors and machine operators	$2.00	$2.21		$2.07
Stereotypers	2.00	1.93–1.99	$2.02	1.75
Photoengravers		2.12		1.97
Journeymen pressmen	1.90	2.06	2.00	1.83
Pressmen-in-charge		2.19	2.15	1.97
Book and job shops:				
Hand compositors and machine operators	2.00	1.75		1.75
Electrotypers		2.00		
Photoengravers		1.83		
Cylinder pressmen	1.76	1.75	1.89	1.70
Platen pressmen	1.61	1.61	1.75	1.70
Press assistants and feeders	1.21–1.32	.82–1.44	.79–1.13	1.25
Bookbinders		1.61	1.89	
Bindery women		.98	1.11	

PACIFIC COAST REGION

(California, Oregon, Washington)

California

Summary. Steadily rising trend of employment likely during next 5 to 10 years. Experienced workers from other States may intensify competition for job openings.

Background. California is the No. 1 printing State west of the Mississippi, and the fifth most important in the Nation. In 1940, the 13,000 printing craftsmen employed in the State accounted for 6 percent of the national total of journeymen (excluding bookbinders). Over 9,000 of these workers were compositors and typesetters; more than 2,000 pressroom workers; and about 1,300 were in photoengraving and lithography work. The great bulk of the employment in California is concentrated in the Los Angeles and San Francisco areas. The latter in particular is one of the country's very few important centers of lithographic production.

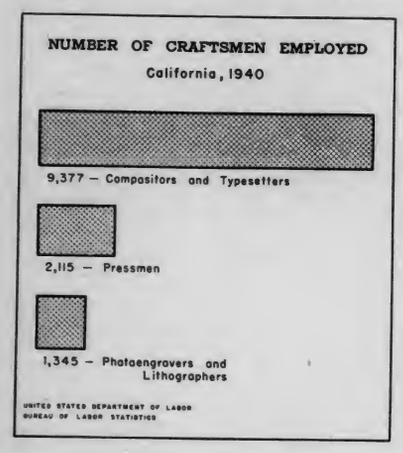
Slightly more than half of the State's total printing output in 1939 consisted of items produced by newspapers. About a fifth of the activity emanated from commercial printing plants. The rest of the work was distributed among periodical printing shops, a small number of book houses some lithographers, and a few bookbinders. Employment for 1939 in each of these categories is shown in the following table:

Type of establishment	Employment 1939	Percent
All establishments	29,372	100.0
Printing and publishing [1]	17,545	59.7
Newspapers	15,573	53.0
Periodicals	1,243	4.2
Books	729	2.5
Job printing	6,047	20.6
Greeting cards	238	.8
Bookbinding	1,210	4.1
Service shops	1,488	5.1
Photoengraving	709	2.4
Typesetting	376	1.3
Engraving	153	.5
Electrotyping and stereotyping	250	.9
Lithography	2,300	7.8
Gravure	107	.4
Shops with output under $5,000	437	1.5

[1] Excludes publishing without printing

Outlook. The great expansion of population and industrial activity in California has carried printing employment to a level almost 50 percent higher than 1939. This increase is larger than in almost any other important State. Population forecasts indicate that California's population will continue to grow more rapidly than the rest of the Nation in future years, and this alone should encourage a long-run increase in printing jobs. Plant expansion for printing was underway on a large scale during 1948. In the next several years, however, gains in printing employment are likely to be moderate.

While hundreds of persons were in training for printing jobs in early 1949 (more than 700 in registered programs alone), job opportunities may well be better in California even for newcomers than in most other States for some time to come. Those who are able to get employment should be able to hold on to their positions indefinitely. Over the long run, however, continued heavy immigration of workers from other States would probably intensify competition for new openings. In some lines, moreover—for example, electrotyping and stereotyping—under the most favorable conditions that can be expected, the available openings will not be numerous enough to encourage the migration from other sections of the country of even journeymen, unless they have fairly definite promise of a job awaiting them.



Earnings. Reports on the union wage scales in Los Angeles and San Francisco, in January 1948, show that more than half of the printing journeymen in these localities were earning from $2 to $2.40 an hour. Complete available data are shown on the following tabulation:

Occupation	Los Angeles	San Francisco
Newspaper shops:		
Hand compositors and machine operators	$2.07	$2.17
Stereotypers	2.07	2.06–2.35
Photoengravers	2.51	2.25
Journeymen pressmen	1.94	2.07
Pressmen-in-charge	2.07	2.27
Book and job shops:		
Hand compositors and machine operators	2.05	2.41
Electrotypers	2.20	2.27
Photoengravers	2.00	----
Cylinder pressmen	2.25	1.87
Platen pressmen	2.14	2.41
Press assistants and feeders	1.61–1.96	1.57–1.98
Bookbinders	2.25	2.41
Bindery women	1.35	1.39

Oregon and Washington

Summary. Small gains in employment possible but most job openings will result from replacement needs.

Background and Outlook. Oregon and Washington are not very important areas for printing employment—Washington having about 2,400 craftsmen in 1940 and Oregon 1,600. Nearly three-fourths of these workers were compositors and typesetters, largely hand compositors. Most of the remainder were in pressroom occupations.

As in many other States with only limited commercial or industrial demands for printing, the bulk of printing output consists of newspapers. However, job shop items made up as much as a fifth of the output in 1939. In Washington, some lithographic work in independent establishments is also done.

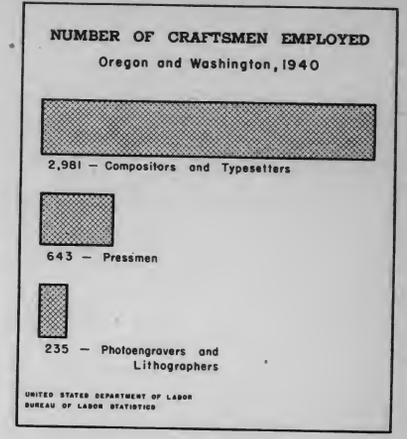
The employment in each category in 1939 for the two States combined is shown in the following table:

Type of establishment	Employment 1939	Percent
All establishments	8,748	100.0
Printing and publishing [1]	6,150	70.3
Newspapers	5,717	65.3
Periodicals	383	4.4
Books	50	.6
Job printing	1,641	18.7
Bookbinding	105	1.2
Service shops	318	3.6
Photoengraving	173	2.0
Typesetting	73	.8
Engraving	56	.6
Electrotyping and stereotyping	16	.2
Lithography	267	3.1
Gravure	----	----
Shops with output under $5,000	267	3.1

[1] Excludes publishing without printing.

Employment has been rising in this region in recent years but not as rapidly as in the country as a whole. Further modest gains are possible in the period immediately ahead. The long-run trend of population growth in these States and other factors indicate a gradual future expansion of employment. However, more important than new jobs during each of the next several years, and probably many years thereafter, will be replacement openings to take care of turn-over—to fill vacancies resulting from deaths and retirements, for example.

Apprenticeship openings are extremely limited in number. In April 1948, there were only four registered area programs for printing trades, principally composition work.



Earnings. The range of union wage scales in effect January 2, 1948, in the three principal printing cities of these States (Portland, Oreg., and Seattle and Spokane, Wash.) was from $1 an hour for book and job bindery women in Spokane to $2.79 for book and job photoengravers in Seattle. The relatively high earnings of printing workers in these cities is shown by the large proportion earning more than $2 an hour.

Complete available data are presented in the following tabulation:

Occupation	Oregon, Portland	Washington	
		Seattle	Spokane
Newspaper shops:			
Hand compositors and machine operators	$2.48	$2.19	$2.00
Stereotypers	2.01	2.19	1.93
Photoengravers	2.20	2.59	----
Journeymen pressmen	1.95	2.05–2.34	1.89
Pressmen-in-charge	2.05	2.18–2.64	2.02
Book and job shops:			
Hand compositors	2.00	2.14	1.88
Machine operators	2.00	2.14	1.98
Electrotypers	2.19	2.29	----
Photoengravers	2.40	2.79	----
Cylinder pressmen	2.00–2.13	2.14	1.88
Platen pressmen	1.93	1.97	1.88
Press assistants and feeders	1.35–1.60	1.41–1.70	$1.40–1.44
Bookbinders	2.00	2.14	1.88
Bindery women	1.20	1.22	1.00

APPENDIX I

Number of Establishments, Value of Products, and Number of Persons Employed in Printing, Publishing, and Allied Industries, 1939 [1]

(Excluding publishing firms that do no printing)

Industry [2]	Number of establishments	Value of products (millions of dollars)	Number employed		
			Total	Proprietors	Employees
Total	35, 817	$2, 225	551, 326	31, 388	519, 938
Plants reporting value of products more than $5,000	21, 933	2, 189	527, 795	17, 213	510, 582
Newspaper	6, 878	898	210, 665	5, 768	204, 897
General commercial (job) printing	9, 595	515	134, 275	8, 216	126, 059
Lithography [3]	749	154	35, 000	278	34, 722
Periodicals	600	202	34, 968	250	34, 718
Books	840	127	30, 842	420	30, 422
Greeting cards, not hand painted	109	39	10, 053	70	9, 983
Gravure, rotogravure, and photogravure [4]	24	19	3, 119	5	3, 114
Service shops:					
Photoengraving	694	56	14, 131	384	13, 747
Machine and hand typesetting	641	25	8, 638	538	8, 100
Engraving (steel, copperplate, and wool) [5]	436	22	7, 194	329	6, 865
Electrotyping and stereotyping	234	29	6, 395	62	6, 333
Bookbinding and related industries	1, 133	103	32, 515	893	31, 622
Plants reporting value of products less than $5,000	13, 884	36	23, 531	14, 175	9, 356
Printing and publishing	13, 570	35	22, 881	13, 835	9, 046
Bookbinding	314	1	650	340	310

[1] Census of Manufactures, vol. II, pt. I, 1939; and Census of Business, vol. III, Service Establishments, 1939.

[2] The industry in which an establishment was classified by the Bureau of the Census was determined by its chief product or products (measured in dollar value of output during 1939), except in the case of newspaper printing. Plants which had done any work of this type during 1939 were classed in the newspaper industry, even if they had also done commercial or other work having a greater value. See the U. S. Department of Commerce, Bureau of Census, *Industry Classifications for the Census of Manufactures, 1939*, pp. 1 and 46-48.

[3] This industry is made up of establishments primarily engaged in preparing lithograph plates and in printing from such plates. The greater part of the work is done to individual order, but in some cases lithographed calendars, commercial forms, maps, illustrated cards, posters, and other items are made for sale. Lithographing of books and pamphlets for publishers is classified in the book printing industry. A great many plants, classified in other printing industries or outside the printing group, do some lithographic work; the Joint Lithographic Advisory Council estimates that at least 2,000 separate establishments had lithographic equipment in 1939 and that, by 1946, the number had increased to about 2,600.

[4] Most establishments in this industry are rotogravure plants, which make plates of pictures by a photomechanical process and also print from these plates. Some few do other types of gravure printing.

[5] These shops service the printing industries with plates engraved by hand or machine and sometimes also print from the plates they make.

APPENDIX II

Addresses of Labor Organizations and Trade Associations

Amalgamated Lithographers of America (CIO), 450 Seventh Avenue, New York, N. Y.

American Newspaper Publishers Association, 370 Lexington Avenue, New York City 17, N. Y.

American Photo-Engravers Association, 166 West Van Buren Street, Chicago 4, Ill.

Book Manufacturers Institute, 25 West Forty-third Street, New York City, N. Y.

Employing Bookbinders of America, 28 West Forty-fourth Street, New York City, N. Y.

Employing Printers Association of America, 53 West Jackson Boulevard, Chicago 4, Ill.

International Allied Printing Trades Association (A. F. of L.), 307 A. F. of L. Building, Washington 1, D. C.

International Association of Electrotypers and Stereotypers, Inc., 350 East Twenty-second Street, Chicago, Ill.

International Brotherhood of Bookbinders (A. F. of L), 901 Massachusetts Avenue, Washington 1, D. C.

International Photo-Engravers' Union of North America (A. F. of L.), 292 Madison Avenue, New York City 17, N. Y.

International Printing Pressmen's and Assistants Union of North America (A. F. of L.), Pressmen's Home, Tenn.

International Stereotypers' and Electrotypers' Union (A. F. of L.), 475 Fifth Avenue, New York, N. Y.

International Typographical Union (A. F. of L.), P. O. Box 728, Indianapolis 6, Ind.

Joint Lithographic Advisory Council, 70 Pine Street, New York, N. Y., Benjamin M. Robinson, Secretary.

Library Binding Institute, 501 Fifth Avenue, New York City, N. Y.

Lithographers National Association, Inc., 420 Lexington Avenue, New York City 17, N. Y.

Lithographic Technical Foundation, Inc., 131 East Thirty-ninth Street, New York City 17, N. Y.

National Association of Photo-Lithographers, 1776 Broadway, New York City 19, N. Y.

National Publishers Association, 232 Madison Avenue, New York City 16, N. Y.

Printing Industry of America, Inc., 719 Fifteenth Street NW., Washington 5, D. C.

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